2008

An Evaluation of Visitor Decisions Regarding Alternative Transportation in Glacier National Park

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AN EVALUATION OF VISITOR DECISIONS REGARDING ALTERNATIVE TRANSPORTATION IN GLACIER NATIONAL PARK

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Dissertation

presented in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

in Forestry

The University of Montana

Missoula, MT

Summer 2008

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Baker, Melissa, Ph.D., July 2008 Forestry

Abstract Title: An Evaluation of Visitor Decisions Regarding Alternative Transportation in Glacier National Park.

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In 2007, Glacier National Park implemented a free, voluntary shuttle bus system along the Going to the Sun Road. The first year of implementation of the transit system at Glacier National Park presented a unique opportunity to evaluate visitor behavior in national parks.

One way that transportation mode choice has been understood is through the theory of planned behavior, which characterizes social behavior as the result of conscious, deliberate thought processes directly related to the behavior in question.

This study examined the intersection of national park visitors' recreation experience preference and their decisions toward shuttle use in a national park. Expanding upon the theory of planned behavior, this study explores the effects of attitudes, subjective norms, and perceived behavioral control as well as visitors' higher order goals of recreation experience preference and desired recreational activities on their intentions toward shuttle use.

Results show visitors' preferences for experiences of solitude and personal control were significant predictors of intentions to ride the shuttle. Furthermore, when added to a model including the constructs of the theory of planned behavior, visitors' desires for experiences of solitude significantly improved the prediction of behavioral intentions beyond that of the theory of planned behavior alone.

Acknowledgements

I would like to take this opportunity to thank the many people who gave guidance, support, and encouragement during the dissertation writing process. It is at the end of a journey that you can truly appreciate the people who helped you along the way.

First to my advisor and dissertation chair, Wayne Freimund, it has certainly been my privilege and pleasure to work with you. Thank you for your guidance (and patience!) as I have navigated the doctoral degree and the dissertation process. Over the past three years you have encouraged me, challenged me, helped me grow, and always been there to celebrate my achievements. I doubt I would have found another advisor who would have understood what this journey has meant to me more than you have.

To my committee members, Steve McCool, Laurie Yung, Doug Dalenberg, and Luke Conway, thank you all for your guidance during this process. Each of you have challenged and stretched me in your own way. I thank you for the growth I have experienced as a result of working with you. Not only have your many efforts on my behalf improved the quality of this dissertation, they have also helped me to become a more critical thinker, a better writer, and have helped me conceptualize the type of professional I want to be.

I would also like to take this opportunity to thank Mike Patterson, Bill Borrie, Norma Nickerson, Christine Oschell, and Bob Dvorak. I could not imagine this journey without you.

Finally, to my husband, Dean Baker, thank you for keeping me fed, clothed, and sane during this process. Your support is the foundation upon which this dissertation was built. I could not have done this without you.

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CHAPTER 1: INTRODUCTION

The purpose of National Parks is to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 U.S.C. § 1). This purpose, often called the dual mandate of the National Park Service (NPS), presents many challenges to park managers. While managers are charged with managing a specific space or resource, they are also responsible for providing opportunities for visitors to recreate (Foresta 1984; Runte 1987; Sellars 1997).

To achieve the goals set forth by the NPS Organic act, park administrators must often manage the behavior of those visitors for whom they are providing recreation opportunities. Management can be either direct (those which are aimed at regulating visitor behavior) or indirect (those which are aimed at influencing visitor behavior). When management actions take the form of direct management, visitors do not have a choice of whether or not to comply with the wishes of managers (at least not without the risk of negative consequences, such as receiving a citation). When management actions take the form of indirect management, however, visitors have the freedom to choose whether or not to behave in the manner suggested by managers (Lime 1977, Manfredo 1992).

When visitors encounter indirect management strategies, they are often faced with a decision. Do they behave as they normally would, or do they respond to the indirect management with a change in their behavior? For indirect management to be effective, it is important that managers understand how visitors make this decision. More

specifically, managers must understand what factors influence specific behaviors if they hope to direct visitors' decisions toward target behaviors.

Nowhere is this complex interaction between protecting resources, providing for use, and managing visitor behavior more evident than in the provision of transportation in parks. As the population of the United States has grown, so has both the number of people visiting national parks and the popularity of the automobile. With people's increasing reliance on personal automobiles, managers of national parks have been forced to increasingly consider transportation when planning and managing for visitor use.

The Influence of the Automobile on National Parks

As early as 1912 the automobile industry began participating in national park policy formation. Automobile associations were first prominent in national park affairs during national park conferences sponsored by the Department of Interior in 1912 and 1915. Groups like the American Automobile Association and several automobile oriented groups from California came to these conferences in order to promote park use (Sellars 1997, Sutter 2002).

With the rising popularity of the automobile, many more Americans had the ability to travel to the national parks. During this time, the policy of the National Park Service was to accommodate as many visitors as possible. Consequently, from the very beginnings of the National Park Service, parks have been developed and designed around the concept of access via automobile (Foresta 1984).

Although the automobile allowed for more people to visit the national parks and thus enlarged the constituency of the National Park Service, motorized access was not without its opponents. While middle class citizens enjoyed more access, most upper

class citizens involved in the parks worried that increasing development of roads and other facilities in the national parks was detracting from their preservation. For example, in 1923, the National Parks Association began voicing their concerns of the impact of roads and the automobile on the natural resources of the parks (Foresta 1984).

Not surprisingly, tourism organizations, auto clubs and park users came out in support of development in the national parks. The idea of increased park use also appealed to Congress (Foresta 1984).

In response to the controversy, the position of the National Park Service was to limit developed areas thereby concentrating use and leaving large portions of the parks in a natural state. Specifically, Stephen T. Mather, the first director of the National Park Service stated,

> "It is not the plan to have the parks gridironed by roads, but in each it is desired to make a good sensible road system so that the visitors may have a good chance to enjoy them. At the same time large sections of each park will be kept in a natural wilderness state without piercing feeder roads and will be accessible only by trails to the horseback rider and hiker." (Mather as quoted in Foresta 1984, p 30.)

Following World War II, the United States entered a period of prosperity and industrialism that combined to provide American citizens with both the means to travel and the time in which to do it. To provide for the increasing demands on the national parks caused by an influx of visitors and their cars and to protect the resource from use in undeveloped areas (by concentrating visitor use designated areas), the National Park

Service launched its Mission 66 plan for increased development of visitor service facilities and roads within the national parks (Foresta 1984; Sellars 1997).

Since 1979, visitation to United States National Parks has increased by almost 80 million recreation visits a year. Although this increase includes the addition of new National Parks into the system, it is also reflective of growing demand at the most popular parks. For example, over the past three decades visits to Zion National Park have increased by 250%. Visits to Grand Canyon National Park have doubled in that time and both Great Smokey Mountain National Park and Yosemite National Park have had approximately one million more visits per year since 1979. Even very rural parks, such as Glacier National Park (where visitation has increased from 1.4 to almost 2 million visitors per year), have experienced a dramatic increase in visitation. Overall, there were over 275 million recreation visits made to areas managed by the National Park Service in 2007 (National Park Service Public Use Statistics Office, n.d).

All of this has combined to create a park system in which increasingly large numbers of visitors have become highly dependent upon their personal vehicles for both traveling to and within the national parks. This dramatic increase in visitation has presented park managers with another challenge: how to mitigate the effects of large numbers of visitors, many of whom drive their personal vehicles, on the environmental resources of parks while still providing for the visitors' experience. One strategy that park planners have embraced as a way to deal with increasing numbers of visitors and their cars is the use of alternative transportation which can include cars, bicycles, pedestrian linkages and mass transit.

Alternative Transportation as a Strategy to Deal with Demand in U.S. National Parks

In 1997, the Secretary of Interior issued a memorandum of understanding (MOU) with the Secretary of Transportation that found that high visitation at national parks was causing problems such as high volumes of traffic on roads and increased demands on parking. In addition, park visitors were experiencing lengthy traffic delays and parking areas often overflowed onto the roadways. Finally, the Secretaries found that some parks were experiencing occasional closures due to roads being at or over capacity. Because of these factors, the MOU identified the need for comprehensive and collaborative transportation planning within the national parks (National Park Service Park Facility Management 2006).

In 2003, the National Parks Alternative Transportation Program reported that 96 national park units had some form of alternative transportation in place. Of these, 12 had shuttle systems that were owned and operated by the National Park Service. In addition, 59 were operated by concessionaires and 37 parks were serviced by public transit (National Park Service Park Facility Management 2006).

While some parks rely on alternative transportation as the sole means by which visitors enter the park, others use it as a way to alleviate traffic congestion and parking problems within their park. For example, in Denali National Park in Alaska, the National Park Service limits personal vehicle use to the first twelve miles of the road within the park. After the initial twelve miles, visitors must use either the park shuttle bus or a tour service provided by a concessionaire (Harrison 1975; Miller and Wright 1999). Another example is Zion National Park where, during the busy summer months, visitors must use the park-operated shuttle if they plan to visit the Zion Canyon area of the park (Mace

2006). Other parks, such as Yosemite and Acadia National Parks, offer shuttle service to visitors on a free, optional basis as a way to remove a portion of the daily traffic from park roads (Daigle and Zimmerman 2004a; Daigle and Zimmerman 2004b; White 2007).

While on the surface, alternative transportation seems to be a reasonable strategy for dealing with traffic and parking issues in the national parks, it is important to consider the effects of implementing such a system. Implementation of a shuttle system could cause changes to both the experience of the visitor as well as the ecological health of the resource. These changes could be positive (such as decreasing traffic congestion and automobile emissions). They could, however, also be negative (such as displaced visitors or increased use of areas that were once constrained by traffic).

For example, the implementation of a shuttle could have very real implications for both front country and backcountry visitors. In the front country, shuttles can provide benefits such as reductions in traffic congestion and overflow parking. In the backcountry, however, the effects of a shuttle system could be mixed. On the one hand, many visitors to the backcountry may begin their hike in one location and end their hike in another location. For these visitors, the shuttle may provide a much needed service. No longer will they have to bring two separate vehicles into the park or try to find a ride from one end of their hike to the other. On the other hand, the shuttle could detract from the experience of backcountry visitors. Areas were visitation was once constrained by the number of cars that park in the lot, will now be able to accept many more visitors. In popular areas, that could change the experience from one of relative solitude to one in which the visitor encounters many other groups.

Much of the research that has been done on alternative transportation in national parks has centered on visitor satisfaction with the transportation system. This research, however, has generally not considered how an alternative transportation system might affect the primary goals of people visiting the park. People generally do not visit a park to ride a bus, but rather they visit to enjoy the scenery, time with families, hiking opportunities, or to experience solitude (among other reasons). How does the existence of a shuttle system affect visitors' ability to achieve their desired recreational experiences or engage in their chosen activities? Are the picnic tables in your favorite area always full? Are the trails crowded? If you choose to ride the shuttle, does the fact that you are now on a schedule detract from your experience? Or, does the ability to ride the shuttle create opportunities to recreate in areas you may not have been able to reach before (either because of lack of transportation or parking limitations)?

In addition to possibly changing the character of the experience, using alternative transportation in national parks could have implications on protection of the resource. Clearly, if the implementation of a shuttle system reduces cars in the park it could provide real benefits in the amount of damage in overflow parking areas as well as reduced air and noise pollution. But beginning shuttle service can also create additional impacts. Increasing the number of people that can recreate in an area (when a shuttle stop is located in an area that my have previously had use limits that were limited by parking availability) may also increase the amount of human caused impacts (i.e. improper handling of food, litter, walking off trail).

What might these possible effects on visitors' experiences and natural resources mean for visitors' decisions toward using an alternative transportation system in a

national park? Will visitors consider these factors when making their decisions toward alternative transportation use?

Reconstruction of the Going to the Sun Road at Glacier National Park

The Going to the Sun Road (GTSR), is a 50-mile road that crosses Glacier National Park (GNP) from the east entrance at St. Mary to the west entrance at West Glacier traversing steep mountainsides and crossing the Continental Divide at Logan Pass. Although the road, which was dedicated in 1933, is designated as a National Civil Engineering Landmark it has endured over 70 years of avalanches, rock slides, severe weather, and heavy use (Vanderbilt & Moler 2006).

In the summer of 2007, GNP began a comprehensive road construction project on the GTSR road. In an effort to mitigate traffic delays, the park implemented a free, voluntary shuttle beginning in the summer of 2007.

To better understand the changes that accompany the construction project and alternative transportation, GNP and the University of Montana conducted two years of research directed at getting a baseline understanding of how specific viewpoints and use areas have been used prior to implementation. As part of that study, visitors were asked a series of questions about their willingness to take a voluntary shuttle in GNP as well as their perceptions on how it would affect their experience of visiting the park.

The results of the 2005-06 visitor studies raised many questions about the implementation of a shuttle system at GNP. How does the use of mass transit at GNP fit within the context of the greater park experience? Also, why would people choose to ride a shuttle at GNP? Is choosing to use the shuttle consistent with the types of experience visitors are hoping to have at GNP?

The first year of implementation of the Transit System at GNP presented a unique opportunity to evaluate how visitors make decisions about using alternative transportation in national parks. The GTSR shuttle system was operational from July 1, 2007, (the day the road opened) through Labor Day (September 3). The initial ridership goal for the GTSR shuttle system was 800 to 1,600 rides per day. Over the course of the season, the shuttle system provided 132,093 rides (approximately 2,000 per day) to GNP visitors who collectively traveled 335,632 miles with demand far exceeding what was anticipated. Ridership was heavily weighted toward the west side of the park with 61 percent (80,626) of boardings on the west side and 39 percent (51,467) of boardings on the east side (Tinkey 2007).

Purpose of the Study

To effectively implement indirect visitor management strategies, such as a voluntary shuttle system, it is important for managers to understand how visitors make behavioral decisions. Assuming visitors come to GNP to achieve some kind of experiential goal, a visitor's decision of whether or not to ride a shuttle may be filtered through the lens of the desired experience. Additionally, for managers to anticipate and plan for visitor demand for shuttle services within a park, it is important that they understand what factors influence visitors' decisions on shuttle use. What motivations do visitors have to use a shuttle in a national park? What constraints to they perceive? And how does a visitor's choice of activity and preferred experience influence that decision?

This study examines the intersection of the experiences sought by park visitors and their responses to indirect visitor management strategies put into place by park managers. More specifically, the objectives of this study are:

- To understand how a visitor's desired primary experience influences their decision of whether or not to ride a shuttle in GNP
- To understand how a visitor's choice of activity influences their decision of whether or not to ride a shuttle in GNP.
- To help managers refine a more effective communication with visitors about the shuttle at GNP
- To better anticipate and predict shuttle ridership

CHAPTER 2: LITERATURE REVIEW

The overarching goal of this research project is to explore the intersection of visitors' higher order goals of their recreational experiences and desired activities with their transportation behavior in the park. To understand the factors that might affect these decisions this chapter reviews the literature of how alternative transportation has previously been studied in national parks. This is followed by a discussion of how transportation mode choice has been studied in social psychology. Then, building upon the framework used to study municipal transportation mode choice (as well as a variety of other social behaviors including recreational activities), the chapter progresses with an overview of the theory of planned behavior (Ajzen 2005).

To situate the decision about transportation mode choice within the experience of visiting Glacier National Park, the chapter concludes with a discussion of the roles of motivations and goals in recreation and an overview of past recreation research at Glacier National Park. This is followed by a conceptual framework for how visitors' decisions toward shuttle use are made within the context of visiting national parks, a model of transportation mode choice organized around the theory of planned behavior and incorporating the higher order goals of recreation experience preference, and desired recreational activities, and finally an overview of the research questions developed based upon the literature presented in this chapter.

Current Research on Alternative Transportation in U.S. National Parks

Many studies have been conducted concerning alternative transportation in National Parks (Daigle & Zimmerman 2004a; Daigle & Zimmerman 2004b; Harrison 1975; Miller & Wright 1999; Sims, Hodges, Fly, & Stephens, 2005; White 2007;

Zimmerman, Daigle & Pol 2004). While some of these studies have looked at support for proposed shuttles (Freimund, McCool & Adams, 2006a; Freimund, Baker & McCool, 2006b; Shiftan, Vary & Geyer, 2006; Sims et al. 2005) others have revolved around satisfaction of both shuttle systems and Intelligent Transportation Systems (ITS) within parks (Daigle and Zimmerman 2004a; Daigle and Zimmerman 2004b; Harrison 1975; Miller and Wright 1999; Zimmerman et al. 2004), system changes resulting from alternative transportation and ITS (Daigle and Zimmerman 2004a), and perceptions of proposed shuttles as well as shuttles already in use (White 2007).

Before implementing a shuttle service, many national parks have commissioned studies aimed at predicting what portion of their visitors would support/use a shuttle within their parks. These studies have generally shown that park visitors would support and/or ride a shuttle (Dilworth, 2003; Freimund et al. 2006a; Freimund et al. 2006b; Shiftan et al. 2006; Sims et al. 2005). For instance, studies conducted at GNP during the summers of 2005 and 2006 found that approximately 70 percent of visitors surveyed indicated their willingness to ride a free, voluntary shuttle within the park (Freimund et al. 2006a; Freimund et al. 2006b). In each of these studies participants were also asked if they would be willing to ride a shuttle if there was a fee involved. There was no significant difference in the study conducted in 2006 between visitors who indicated a willingness to ride a free shuttle and those who indicated a willingness to ride a shuttle in which there was a fee of five dollars (Freimund et al. 2006b). The 2005 study at GNP, however, indicated that a smaller but still substantial percentage of visitors (63%) would be willing to use a shuttle within the park if at a cost of five dollars (Freimund et al. 2006a). This difference, however, may be attributable to how the questions were asked.

In the 2005 Glacier study the visitors were asked both questions (willingness to ride a free shuttle as well as willingness to ride a shuttle with a five dollar fee) while in the 2006 study visitors were asked only one of the two questions (Freimund et al. 2006a; Freimund et al. 2006b).

Regarding shuttles that are already in use, many studies have focused on visitor satisfaction. Studies concerned with satisfaction of alternative transportation and ITS have traditionally been based on the expectancy-valence theory in social psychology which assumes that visitors engage in specific behaviors in order to achieve desired outcomes (Ajzen 2005; Ajzen and Fishbein 1980). These studies have shown that visitors are generally satisfied with alternative transportation and ITS information (such as real time data on bus departure times and parking availability) in national parks (Harrison 1975; Miller and Wright 1999). In addition to being satisfied with the Island Explorer shuttle at Acadia National Park, Daigle and Zimmerman (2004a) found that visitors considered information made available to them through ITS technologies to be a useful tool in planning their trip.

Other studies have focused on the effects of alternative transportation and ITS on parking in national parks (Daigle and Zimmerman 2004b) During summer 2002, a study was conducted at Acadia National Park to assess what changes, if any, resulted from the implementation of ITS technology inside the park. Real-time parking data was made available at visitor centers, campgrounds, and shuttle stops through ITS technology for two high-use parking areas. Studies of the chosen parking areas revealed that although visitation levels *increased* from 2001 to 2002, the number of cars parked in the lots chosen for observation *decreased*. The differences in parking lot use between 2001 (pre

ITS) and 2002 (the year that ITS was introduced), however, were not significant (Daigle and Zimmerman 2004b).

Finally, some studies have focused on visitors' perspectives of shuttles in national parks (Freimund et al. 2006; White 2007). In an interpretive study conducted at Yosemite National Park (YNP) during the summer and fall of 2005, visitors were asked to participate in a short, semi-structured interview intended to evaluate visitors' perspectives toward alternative transportation. Results of the study revealed that visitor behaviors and perspectives toward alternative transportation inside the park were composed of both individual psychological factors (e.g. perceived freedom, environmental values, and perceived crowding) and situational influences (e.g. convenience, access, flexibility, and trip and group characteristics) (White 2007).

Building upon the results of the YNP study, a sub-sample of visitors in the 2006 GNP study were asked to participate in an interview consisting of a series of open-ended questions that explored why visitors might choose to take a shuttle in GNP and what characteristics the shuttle would need to have to satisfy their needs (Freimund et al. 2006b). Results of that study indicate that visitors considered both aspects of the proposed shuttle (i.e. comfort, convenience, capacity) as well as aspects of their desired experience (i.e. social interaction, solitude, desired freedom) when considering whether or not to ride a proposed shuttle at GNP. Furthermore, those visitors who had previous experience with mass transportation (both inside and outside national parks) generally indicated a willingness to use the proposed shuttle at GNP (Freimund et al. 2006b).

While each of the studies mentioned above provides valuable insight into support for and predicted ridership of hypothetical shuttles as well as visitors perspectives' of

shuttles already in use, no studies have yet to address why visitors choose to use an existing shuttle system in a national park or how a visitor's experience preference and activity choice influence their decision of whether or not to ride a shuttle. Also, how important are the factors mentioned by White (2007) in his study at Yosemite National Park (e.g. group size, length of stay) to visitors' decisions on travel mode choice in national parks? For example, are visitors who are traveling in larger groups or with small children less likely to ride the shuttle? Or, are people who are staying in the park for longer periods of time more likely to ride the shuttle?

Research on Transportation Mode Choice

While studies within national parks have yet to explore the psychological components of transportation mode choice, these components have been explored with respect to the use of municipal public transportation in the transportation and social psychology sectors. Within these disciplines the decision of transportation mode choice has been conceptualized as both a rational, deliberate process and an automatic, non-conscious process influenced by past behavior and habit (Aarts and Dijksterhuis, 2000; Aarts, Verplanken & Van Knippenberg, 1998; Bamberg, Azjen & Schmidt, 2003a; Bamberg, Rolle & Weber, 2003b, Davidov, 2007; Garvill, Marell & Nordlund, 2003; Gilbert and Foerster, 1977; Heath and Gifford, 2002; Klockner & Matthies, 2004; Verplanken, Aarts, Van Knippenberg, & Van Knippenberg, 1994; Verplanken, Aarts, & Van Knippenberg, 1997, Verplanken, Walker, Davis & Jurasek, 2007).

These conceptualizations of transportation mode choice are consistent with how social behavior has been understood in social psychology (Ajzen, 2005; Bargh & Chartrand, 1999; Ferguson & Bargh, 2004). One line of research characterizes human

behavior as being based upon a conscious, deliberative thought process in which people logically weigh the relevant aspects of the behavior in question and then choose whether or not to engage in that behavior (Ajzen, 2005). Other studies, however, have shown that much of human behavior is based on automatic thought processes in which people instantly make evaluations on the given behavior without consciously processing the evaluations (Bargh & Chartrand, 1999). This conceptualization of human behavior, referred to as the theory of automaticity, does not deny the use of conscious processes in determining behavior (or in forming evaluations and expectations regarding a specific situation). Instead it asserts that humans exercise conscious choice initially, but with repeated exposure to similar situations paired with repeated internal reactions to said situations the need to consciously consider that reaction is reduced (eventually becoming altogether unnecessary) and that judgment becomes automatic (Bargh & Chartrand, 1999). Thus transportation mode choice would begin as a conscious, deliberative decision process, but after repetition of a specific behavior the choice would become automated and thus habitual.

In fact, there is a significant body of research on the relationship between habits and rational decision-making in travel mode choice. These studies have focused on the role of habit in transportation mode choice and the moderating effects of specific interventions and context change on transportation mode choice habits. (Aarts and Dijksterhuis, 2000; Aarts et al., 1998; Bamberg et al. 2003a, 2003b; Davidov, 2007; Heath and Gifford, 2002; Garvill et al., 2003; Verplanken et al., 1994, 1997, 2007).

Verplanken et al. (1994), posit that travel mode choices are repetitive by nature. They state that in daily life, people are faced repeatedly with the need to make specific

trips (e.g. travel to work, school, shopping) and that travel mode for these specific trips become habitual and thus are not subject to rational, deliberative decision making. Furthermore, these habitual travel mode choices are transferred to non-repetitive travel occurrences that are similar to those experienced in daily life (Verplanken et al., 1994). Aarts et al. (1998) agree with this conceptualization explaining that once actions become habitual the need for information and deliberate decision process is greatly reduced.

The link between rational decision-making and habitual choice of travel mode was the focus of studies by Verplanken et al. (1994) and Aarts et al. (1998). In the study on car choice behavior, Verplanken et al. (1994) postulated that both car choice habit and attitude toward alternative transportation (i.e. train) would be useful predictors of transportation mode choice. Results of the study showed that both factors, as well as their interaction term, were predictive of behavior. More specifically, strong car choice habit was associated with a weak attitude-behavior relationship while a weak car choice habit was associated with a strong attitude-behavior link (Verplanken et al., 1994).

Results of a study by Aarts et al. (1998) also corroborated the theory that habit has moderating effects on the rational-decision making process. Building upon the framework of the theory of reasoned action (Ajzen and Fishbein, 1980), Aarts et al. (1998) sought to understand how habitual travel mode choice interacted with attitudes, social norms, and behavioral intentions in predicting future travel mode choice. Results of the study showed that attitudes and social norms did predict intentions toward car use, and subsequently intentions predicted behavior. Intentions, however, became less predictive of behavior as habit strength (car use) increased thus indicating that deliberate

decision-making became less important as travel mode became habitual (Aarts et al., 1998).

Aarts and Dijksterhuis (2000) further conceptualize the habitual choice of travel mode within the context of the automatic activation of goals. According to the theory of the automatic activation of goals, automatic evaluations of behaviors take place within the context and in consideration of the goal or goals a person is currently pursuing (Bargh & Chartrand, 1999). Aarts and Dijksterhuis (2000) posited that the strength of the relationship between goals and specific actions (e.g. travel mode choice) was dependent on the frequency in which a behavior was performed. Through a process of priming travel goals and asking participants to indicate a travel mode, the study showed that habitual responses were difficult and often impossible to suppress when participants were engaged in a secondary task. These results support the theory that travel mode choice can become habitual through automatic association with travel goals (Aarts and Dijksterhuis, 2000).

While the studies discussed above show the importance of habit and automatic processes in determination of transportation mode choice, other studies have sought to understand the conditions under which the influence of habit might be suppressed in order for a transportation mode shift to take place. These studies have primarily focused on the use of interventions (e.g. free fare tickets and focus on new information) and changes of context in which the transportation mode decision is made. (Bamberg et al., 2003a, 2003b; Davidov, 2007; Garvil et al., 2003; Verplanken et al., 1997, 2007).

Several studies have focused on the effects of interventions on habitual transportation behavior (Bamberg et al., 2003a, 2003b; Garvil et al., 2003; Verplanken et

al., 1997) In a study on the effects of the intervention of a prepaid bus ticket on increased bus use among university students, Bamberg et al. (2003b) found that the intervention significantly influenced all dimensions of the theory of planned behavior (a theory in social psychology that characterizes social behavior as the result of rational, deliberate thought processes in which attitude, subjective norms, and perceived behavioral control, are predictive of intention which is predictive of behavior; this theory is described in detail in the next section). Also, the theory of planned behavior was effective in predicting bus use both before and after the intervention. Past behavior, however, improved prediction of bus use prior to receiving the prepaid pass but not after (Bamberg et al., 2003b).

Verplanken et al. (1997) also conducted a study to understand the effects of interventions on transportation mode choice. Results of their study showed that when participants focused on their decision of travel mode, rational processes over-rode the effects of habit. These effects were temporal, however, with habit becoming more predictive as the time between intervention and behavior was increased (Verplanken et al., 1997).

Another study by Bamberg et al. (2003a) examined the effects of an intervention (i.e. free bus pass) combined with a change in context (moving to a new town). Results of this study showed that interventions were effective in changing participants' attitudes, subjective norms and perceived behavioral control thus facilitating a change in travel mode and that the constructs of the theory of planned behavior were effective in predicting this change in intentions and behavior. (Bamberg et al., 2003a).

Results of a similar study by Davidov (2007) support these findings. The study explored the effects of available information on travel mode choice among people who had recently moved to a new town. Results of the study show that people in the intervention group (i.e. those who had received information on public transportation) chose public transportation more often than those who had recently moved and had not received the intervention as well as those who had received the intervention but had not recently moved. Furthermore, the study found that habit had no effect on travel mode choice among the group who had both the change in context and the intervention (Davidov, 2007).

Verplanken et al. (2007) also examined the effects of a change of context and important personal values on travel mode choice. Results of the study showed that when an individual experienced a change of context (e.g. moving to a new town) the effects of their important personal values (i.e. environmental concern) were more predictive of travel mode choice than the effects of their travel mode choice habit. Furthermore, those who had a personal value of environmental concern and had experienced the change in context used the car less frequently than people with low environmental concern and those who had high environmental concern but had not experienced a change in context (Verplanken et al., 2007).

These studies indicate that while travel mode choice can become habit (and thus determined by automatic processes), when made within a new context (such as visiting a national park), decisions on transportation mode can be conscious and deliberate even among those with strong travel mode habits. This indicates that travel mode at national

parks could be deliberately and consciously chosen, especially in parks where alternative transportation choices are newly available.

Theory of Planned Behavior

As mentioned in the previous section, the theory of planned behavior (TPB) is a common conceptual framework for studying social behavior (Bamberg et al., 2003a, 2003b, Heath and Gifford, 2002). The theory of planned behavior is based upon the assumption that people usually consider available information and its implications and then consciously choose to engage (or not to engage) in a specific behavior (Ajzen, 2005). While the theory of planned behavior does allow for both explicit and implicit consideration of the ramifications of prospective behavior, the basic premise of the theory is that humans reason through their actions before engaging in them (Ajzen, 2005).

In the theory of planned behavior, an individual's behavior is theorized to be influenced by their attitudes toward the behavior, their subjective norms (explained below), and the amount of control they perceive they have over engaging in the behavior (Ajzen, 2005). (Figure 1)

Each of these components in turn is composed of other factors. For instance, a person's attitudes toward the target behavior (their subjective evaluation, either positive or negative, of the target behavior) is influenced by the behavioral beliefs, or the beliefs about the outcomes of engaging in the behavior as well as their evaluations of these likely outcomes (Ajzen, 2005).

Subjective norms (or the social pressure a person feels to engage in that activity) are also influenced by their antecedents. The theory postulates that subjective norms are composed of an individual's normative beliefs, which are comprised of the perceived

injunctive and descriptive norms of their important referents and the individual's motivation to comply with those norms (Ajzen, 2005).

Finally, control beliefs are posited to be antecedents of perceived behavioral control. Control beliefs are comprised of control belief strength (the likelihood that a facilitating or impeding factor will be present) and control belief power (the extent to which the factor, if present, will affect the individuals ability to perform the target behavior) (Ajzen, 2005).

The combination of these three factors (attitudes toward behavior, subjective norm, and perceived behavioral control) is posited to influence a person's behavioral intention which, in combination with perceived behavioral control (to the extent that it is an accurate indicator of actual control), predicts actual behavior (Ajzen, 2005).

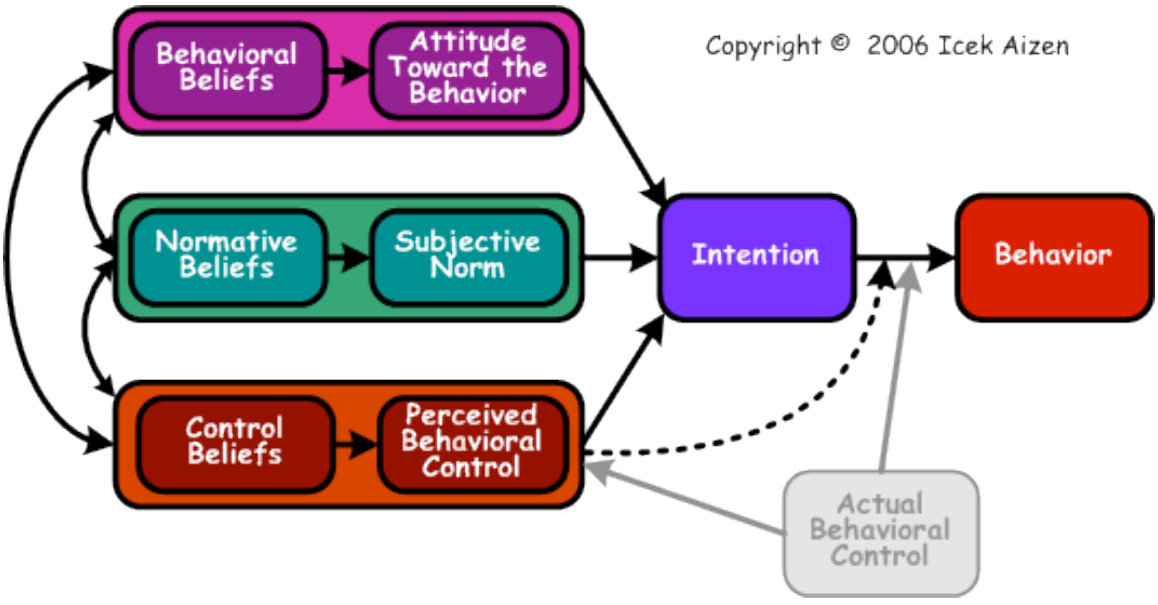

Figure 1: Model of the Theory of Planned Behavior (Ajzen, 2006)

Attitudes

According to TPB, attitudes toward a specific behavior are formed based on a person's beliefs about the behavior. Each of the antecedent beliefs about a behavior (e.g. riding a shuttle bus at GNP) are associated with a specific outcome. So, a person's attitude toward the behavior in question will be composed of their behavioral belief, or how likely a person thinks a specific outcome of engaging in an activity is (e.g. avoiding traffic congestion or being forced to keep a time schedule) and how positively or negatively they evaluate that outcome (Ajzen 2005).

It is the combination of behavior beliefs and the evaluation of those outcomes that form a person's attitude toward the target behavior. Positive attitudes toward shuttle use will occur when a person believes outcomes that they rate positively are likely to happen (e.g. not having to deal with undesirable traffic conditions) and when they believe outcomes that they rate negatively are unlikely to happen (e.g. being more aware of time while visiting GNP). Negative attitudes toward shuttle use will occur, however, when a person believes a desirable outcome is unlikely to occur (e.g. being able to get on the bus they want) or when they believe an undesirable outcome is likely to occur (e.g. being with new and different people).

In a study of attitudes toward hunting and hunting behavior, Hrubes, Ajzen & Daigle (2001) found that attitudes toward perceived benefits and costs of hunting were significantly and strongly correlated with intentions to hunt as well as engagement in hunting. In a similar study on predicting the use of public transportation, Heath and Gifford (2002) found that attitudes were significant in predicting public transportation use.

Subjective Norms

Similar to attitudes, subjective norms are assumed to be determined by beliefs. In the case of subjective norms, however, the salient belief is that of how other people evaluate the behavior in question (specifically those people and groups considered important by the individual being questioned). These significant others, known as social referents, could include parents, spouses, friends, co-workers or those considered experts on the behavior in question. According to TPB, subjective norms are a function of both how a person believes their important social referents evaluate the behavior in question (i.e. riding a shuttle at GNP) and how motivated they are to comply with the beliefs of those referents. Subjective norms are most influential on behavioral intentions when important referents are thought to have strong beliefs about the behavior in question and when the subject has a strong motivation to comply with the beliefs of that referent (Ajzen 2005).

In a study of public acceptance of newly imposed restriction on recreational activities in a nature reserve in Switzerland, Seeland et al. (2002) found that all components of the TPB were significant in predicting behavioral intentions (to comply with restrictions). Furthermore, in this study, subjective norms explained significantly more variation than either attitudes or perceived behavioral control (Seeland et al. 2002). In addition, findings of the study by Heath and Gifford (2002) mentioned above indicate that moral norms (the feeling of moral obligation to engage in a specific behavior) were also significant in the prediction of bus ridership.

Perceived Behavioral Control

Like attitudes and subjective norms, perceived behavioral control is also considered to be a function of beliefs. In this instance, the salient beliefs are centered on two factors: control belief strength and control belief power.

Control belief strength is the extent to which a person expects a specific characteristic that may facilitate/impede their ability to engage in the target behavior to be present. These characteristics can be directly related to the target behavior (e.g. I expect I will be able to get on the bus I want), but they can also be related to the context within which the target behavior takes place (i.e. the experience of visiting GNP, e.g. I expect I will have plenty of time to do the things I want to do at GNP during this visit) or characteristics of the person themselves (e.g. I will be physically able to walk only limited distances).

Control belief power, however, is the extent to which a person expects a specific characteristic (if present) to facilitate or impede their ability to engage in the target behavior. Each of the examples discussed above, for example, may be considered to either make riding the shuttle at GNP either easier or more difficult.

It is the combination of the existence (or non-existence) of each of the characteristics and the evaluation of their ability to facilitate or impede the target behavior that forms perceived behavioral control. For example, being able to get on the bus you want would clearly make riding a bus at GNP easier. But what if the person in question doesn't believe that this characteristic will exist? If this is the case, then the lack of ability to get on the bus you want could be a significant perceived behavioral control. The converse is also true. If a person believes that a condition will exist, but evaluates it

as a factor that will make riding the bus more difficult then they will perceive it as a control on their behavior (e.g. carrying a lot of gear when traveling on the Going-to-the-Sun Road).

Perceived behavioral control has implications for both behavioral intentions as well as actual behavioral performance in the TPB. In a study by Ajzen and Driver (1992), college students were asked to participate in a TPB questionnaire regarding five different recreational activities (going to the beach, running, mountain climbing, boating, and biking). Results of the study indicated that perceived behavioral control was significant in predicting both behavioral intention and actual behavior (Ajzen and Driver 1992). Similar results were obtained in a study of choice of travel mode conducted by Bamberg et al. (2003b). In this study, which investigated the effects of introducing a prepaid bus ticket on bus ridership, perceived behavioral control was again shown to be a significant predictor of both behavior intentions and engagement in the target behavior (Bamberg et al. 2003b). In both of these studies, perceived behavioral control was more significant where participants perceived high constraints on the behavior in question than in situations where they perceived few constraints (Ajzen and Driver 1992; Bamberg et al. 2003b).

The theory of planned behavior seeks to predict behavior by understanding the conscious considerations that individuals make regarding that behavior. The behavior that is being studied can be immediate or can take place over a designated period of time (Ajzen, 2005).

The theory accounts for an individual's attitudes toward the behavior, their subjective norms, and their perceived behavioral control. It does not, however, consider

the effects of the multiple goals people may be pursuing at the time that the behavior takes place. Furthermore, it does not consider non-conscious mental processes in which evaluations of the target behavior could be made based upon perceptions of the behavior itself or of things that have been associated (even indirectly) in memory.

While the studies discussed here show the effectiveness of the TPB in predicting behavior, they have not considered the greater context in which the specific behavior takes place. In each of these studies, survey questionnaires dealt only with the specific behavior of interest (i.e. hunting, recreation activities, riding the bus). In the case of shuttle use at GNP, however, it is important to consider that the decision of whether or not to ride a shuttle is couched within a visitor's overall recreational experience. In other words, visitors' desires for recreational experience and activities may be more salient at the time of decision on shuttle use than is their choice of transportation mode.

The Role of Goals and Motivations in the Recreation Experience

To understand the decision to use a shuttle within the context of visiting a national park, it is important to understand how the conceptualization of experience goals has been used to understand recreation behavior. Goals are defined in social psychology as desired states that are represented mentally and that guide behavior (Aarts and Hassin, 2005). Goals vary along a spectrum of immediate and temporal (e.g. traveling to campus) to long-term (e.g. earning a college degree) or life-long pursuits (e.g. gaining wisdom). Similarly, the multiple goals that an individual pursues can also vary from those that are very concrete (e.g. completing a task) to those that are very abstract (e.g. being a good person; Carver and Scheier, 1998; Emmons, 1986; Miller and Read, 1987).

Carver and Scheier (1998) postulate that the different types of goals described above exist within a hierarchy with broad, abstract goals at the top of the hierarchy and specific, temporal goals at the bottom. Within this hierarchal order are "system concepts" (abstract reference values such as the idealized self), "principles" (qualities that the person is trying to obtain such as honesty), "programs" (activities that one deliberately engages in to achieve higher order goals), and "sequences" (automatic behaviors that are necessary to achieve program goals). In this conceptualization higher-order goals guide the development, salience, and strategies used to achieve lower-order goals. In other words, lower-order goals are created as mechanisms to achieve higher-order goals (Carver and Scheier, 1998).

This conceptualization of the sequential nature of goal-directed behavior is consistent with the model of recreation demand proposed by Driver and Brown (1975). Based upon the expectancy theory in social psychology, this behavioral approach to understanding recreation suggests that people engage in recreation activities to achieve goals or satisfy needs (Brown and Haas, 1980; Driver and Brown, 1975; Driver, Brown, Stankey & Gregoire, 1987; Driver, Tinsley & Manfredo, 1991). More specifically, this approach defined recreation opportunity as "the opportunity to engage in a preferred activity such as hiking; in a preferred setting, such as a remote area; to realize desired experiences such as physical exercise, isolation, and nature appreciation" (Driver et al., 1987, p. 203).

In other words, when an individual decides to recreate, they do so with the goal of achieving a desired recreation experience. To achieve this goal, the individual chooses a recreation activity and setting that can help them achieve their desired recreation

experience. This conceptualization of recreation demand fits nicely within Carver and Scheier's (1998) model of a goal hierarchy with desired recreation experience, activity, and setting choice existing sequentially at the program level.

While early research was focused on identifying and categorizing these constructs through the development of conceptual frameworks such as the Recreation Experience Preference (REP) scale and the Recreation Opportunity Spectrum (ROS), later research has sought to understand the relationship between them (Manfredo, Driver & Tarrant, 1996; Manfredo and Larson 1993; Manning 1999; Pierskalla, Lee, Stein & Anderson, 2004).

For example, in a meta-analysis of nine benefits-based management studies Pierskalla et al. (2004) examined the relationship of activity and setting to the attainment of recreational benefits. Findings of the study indicated that recreational benefits fell into four categories: activity-based benefits (those most closely associated with activity), setting-based benefits (those most closely associated with setting), activity and setting based benefits (those most closely associated with both), and elusive benefits (those closely associated to neither) (Pierskalla et al. 2004).

Furthermore, in study of wildlife viewing experiences Manfredo and Larson (1993) found that residents of the Denver Metropolitan Area could be classified into four "experience types" based upon combinations of different dimensions of experience preference: High Involvement Experience, Creativity Experience, Occasionalist Experience, and Generalist Experience. Study findings indicated distinct differences in the activities chosen by the four groups (Manfredo and Larson 1993).

While the above studies have shown the existence of a relationship between the input and output components of the production model, they do not address how visitors deal with differences between their desired experience and their actual experience. In a study of day visitors to White River National Forest, Stewart (1992) administered an experience preference questionnaire to participants before and again after hiking a popular trail.

Based upon the theory of Cognitive Dissonance, Stewart (1992) hypothesized that visitors would adjust their experience preference to reflect their actual experience. Results of the study showed a significant interaction effect between time (pre/post activity administration of REP) and experience achievement. More specifically, visitors who reported a specific experience (i.e. "physical exercise") as a high priority before their hike and subsequently achieved that experience tended to again rate it as a high priority in the post-activity administration of the questionnaire. Visitors who rated an experience as high priority and then failed to achieve that experience, however, tended to rank that experience as a lower priority in the second administration of the instrument (Stewart 1992).

The results of these studies imply that the types of experiences that visitors hope to achieve may influence their choice of activity. This begs the question of how those primary motivations for visiting the park will influence a visitor's decision of whether or not to ride a shuttle. In addition, the types of activities and settings in which people recreate may influence their perceived recreational benefits. In cases where desired expectations are not realized (reduced recreational benefits), however, visitors may

reconcile their experience preference with their actual experience by reducing the importance of the missing benefit.

Recent research in the recreation literature has sought to understand the emergent nature of the on-site recreation experience (Borrie and Roggenbuck 2001; Patterson, Watson, Williams & Roggenbuck, 1998; Stewart 1998). Patterson et al. (1998) discuss the recreation experience as an emergent experience best understood in its entirety. Results of the study imply that the recreation experience is emergent throughout the process with a distinct "phase" at the end of the trip in which people reflect upon and relive their experiences through the telling of stories that help define their meaning (Patterson et al. 1998).

Another finding of the study indicated that expectations visitors have of their experience can be an appropriate basis for measuring the quality of the recreation experience, but only when those expectations are appropriate. In other words, if a person's expectation of what they might experience is consistent with the types of experiences they may have, that expectation could be an appropriate basis by which to judge satisfaction of the experience. If the visitor has unrealistic expectations, however, and those expectations are the sole basis used for assessing the quality of their experience, measures of satisfaction could be misleading. The unrealized expectation could either enhance (by experiencing an unexpected positive event) or detract from (by experiencing an unexpected negative event) the quality of their experience (Patterson et al. 1998).

A later study by Borrie and Roggenbuck (2001) also explored the concept of the emergent, multi-phasic on-site experience. In their study, which was conducted in the

Okefenokee National Wildlife Refuge, Borrie and Roggenbuck (2001) posited that the on-site phase of the recreational experience would itself be composed of distinct phases (specifically entry, immersion, and exit phases) The study also hypothesized that the leisure experience is composed of several states of mind, which include emotions, personal meanings, and cognitions related to the leisure activity and that these states of mind will vary across different phases of the experience (Borrie and Roggenbuck 2001).

The results of these studies imply that the types of experiences visitors hope to achieve may influence their choice of activity and setting. In addition, the types of activities and settings in which people recreate may influence their perceived recreational benefits. It is important, however, to recognize the dynamic nature of the recreation experience which allows for visitors to adjust to unplanned for changes in activities and settings while still having a satisfactory experience. In cases where desired expectations are not realized (reduced recreational benefits), visitors may reconcile their experience preference with their actual experience by reducing the importance of the missing benefit.

These studies raise interesting questions about the relationship between the preferred experience at GNP, and the visitor's decision whether to ride a shuttle inside the park. Will the types of experiences preferences (i.e. to feel my independence, to talk to new and varied people, or to view scenery) that visitors to the park have influence their decision to ride a shuttle in GNP? And if so, what do we know about visitors to GNP that may be influential in their decisions on shuttle use?

Recreation Research at Glacier National Park

Many studies have been conducted in an effort to understand how visitors recreate in GNP (Freimund et al. 2006a; Freimund et al. 2006b; Hikida 1994; Miller, Freimund &

McCool, 1997; Miller and McCool 1994). These studies provide a valuable perspective from which to study shuttle use in GNP.

Visitors to GNP tend to come to the park with specific motivations (Miller et al. 1997; Miller and McCool 1994). In addition, when their experiences differ from their expectations, GNP visitors adapt in a variety of ways (Hikida 1994; Miller et al. 1997; Miller and McCool 1994; Miller and McCool 2003). Finally, several studies have explored visitors' perceptions of alternative transportation at GNP (Freimund et al. 2006a; Freimund et al. 2006b; Miller et al. 1997; Miller and McCool 1994).

The majority of visitors to GNP (92%) are United States residents with 17 percent being from Montana (Freimund et al. 2006b). Visitors spend an average of 2 nights inside the park and just under six percent of visitors are there for a single day (Freimund et al. 2006b; Hikida 1994). Also, visitors to GNP are highly educated, with almost 90 percent having graduated from college or graduate school (Hakida 1994).

The average group size of visitors to GNP in the 2006 study by Freimund et al. was four people. It should be noted, however, that a large number of visitors (40%) are traveling in groups of two. In addition, a large majority of people visiting GNP (80%) are coming to the park with family members (Freimund et al. 2006b).

In a study of GNP visitors' expectations and motivations, Miller and McCool (1994) found that the top two reasons visitors cited for coming to the park were "to view scenery" and "to view wildlife." In a similar study conducted in 1997, visitors cited six reasons for visiting the park: nature appreciation, solitude, introspection, security, wildlife appreciation, and personal control (Miller et al. 1997).

Additionally, in the 1994 study by Miller and McCool, visitors generally fell into three specific motivational domains: “Escape” (visitors seeking rest and relaxation, a change of routine, and time for privacy and reflection), “Nature Appreciation” (visitors seeking appreciation of natural scenery and wildlife), and “Activity/Social” (visitors seeking to participate in activities or meet other people). Visitors in the 1997 study were likewise segmented into four categories. The first two categories were similar to those in the 1994 study, namely “Escapists” and “Naturalists”. However, visitors in this study also fell into the categories of “Parkists” (those who rated almost all factors as important), and “Secure Solitude” (those who sought both solitude and security) (Miller et al. 1997).

Studies have also shown that visitors to GNP are quite adaptable when their expectations and their experiences are not congruent (Miller et al. 1997; Miller and McCool 2003). In a study of the needs and preferences of GNP park visitors, Miller et al. (1997) found that visitors are most likely to rationalize conditions that are inconsistent with expectations and still enjoy their experience. When that was not the case visitors tended to substitute either the activity or the time of day in which they recreated to achieve a setting that was more consistent with their desires (Miller et al. 1997). Findings of a study of how recreationists handle stress at GNP revealed similar results. In situations of low and moderate stress, visitors tended to cognitively adjust to the situation or substitute the activity, setting, or the time in which they recreated. When visitors were subject to conditions that caused high levels of stress (a small percentage of the sample), however, they tended to take direct action to change the situation (i.e.

complaining to park staff) or changed their behavior to alter the activity engaged in as well as the location where they recreated (Miller and McCool 2003).

Finally, many studies have explored visitors' perceptions of the use of alternative transportation at GNP (Freimund et al. 2006a, 2006b; Miller et al. 1994; Miller et al. 1997). Results of these studies have showed general support for alternative transportation at GNP. In the 1994 visitor study by Miller and McCool, visitors were asked to indicate their "most preferred" actions for dealing with traffic along GTSR. The most popular response to the question was the provision of public transportation in the park, followed by restriction of vehicles in off peak times and increased fees for visitors using private vehicles (Miller and McCool 1994).

While visitors preferred the option of public transportation in the 1994 visitor study, visitors were not asked if they personally would ride a shuttle in the park. This question was addressed in both the 2005 and 2006 GNP visitor studies. In both of those studies, just over 70 percent of visitors surveyed indicated their willingness to ride a free, voluntary shuttle at GNP (Freimund et al. 2006a, 2006b).

Visitors were also asked a variation of this question in the 1997 study by Miller et al.. In that study, visitors were asked of their willingness to use public transportation in GNP in order to achieve desired user density on their chosen hiking trail. Forty percent of those surveyed indicated that they would not be willing to use public transportation in GNP for that reason (Miller et al. 1997). These findings indicate that while visitors may be willing to use a shuttle at GNP, user density while hiking on trails may not be a compelling reason for them to do so.

Results of these studies indicate that although visitors may come to GNP for reasons other than riding a shuttle, they may very well be able to reconcile using a shuttle bus in the park with their primary desired experiences and activities. While the studies discussed above provide evidence that GNP visitors will be willing to ride a shuttle, what remains to be understood is what factors will be important to them when making the decision of whether or not to ride the shuttle once it is in place.

While many of these factors will be easily measured by a theory of planned behavior questionnaire, others may not. For example, a person who visits the park in order to experience solitude and immerse themselves in nature may have very positive attitudes about the shuttle and the possible outcomes of riding it (even evaluating it as consistent with the type of experience they desire). They may also feel that important referents in their life would support their use of the shuttle and that there are few impediments to their riding it. It may be, however, that this person's primary desire in visiting the park has primed them to get away from civilization and thus where they may have ridden the shuttle in a different situation; they may choose not to ride it within the context of visiting the park. In other words, the higher-order goals of recreation experience preference and desired activities may be predictive of transportation mode choice beyond what is explained by the theory of planned behavior.

Summary

Transit mode choice has been shown to be primarily a function of habit within stable contexts (Verplanken et al., 1994; Aarts et al., 1998). When the context in which the decision of travel mode is made changes, however, studies have shown that the

effects of habit are greatly diminished and possibly even removed (Bamberg et al., 2003a, 2003b; Davidov, 2007; Garvil et al., 2003; Verplanken et al., 1997, 2007).

It is a proposition of this study that the context of visiting Glacier National Park is sufficiently different than the contextual basis of habitual travel mode choice for most visitors for two reasons. First, for many visitors the experience of visiting Glacier National Park was a significant change in their daily activities in that they are in a new (or at least different) physical environment and that the focus of their daily activities is on recreation rather than daily responsibilities. Also, the implementation of the free, voluntary shuttle system at Glacier National Park in the summer of 2007 created a condition where visitors had a choice of travel mode (that did not constitute additional monetary cost) where once they didn't. Thus, even for visitors with strong travel mode habits the decision of whether or not to use the shuttle system at Glacier National Park will be a rational decision and thus appropriately studied within the context of the theory of planned behavior (where the decision of whether to ride the shuttle is measured as intention to ride).

It is also an assumption of this study that the goals visitors pursue when visiting Glacier National Park (including travel mode choice) are hierarchical in nature and that these goals exist at the program level of Carver and Scheier's (1998) hierarchy of goals (Figure 2). Additionally, travel mode choice is assumed to exist at different levels of the program component of the hierarchy of goals depending on the types of experiences and activity goals that park visitors have. If the behavior of riding a bus can directly contribute to a visitor's desired experience or chosen activity (e.g. viewing scenic beauty) then the choice of travel mode may be highly salient and thus the effects of the

experience or activity goal may directly contribute to the individual's attitudes toward riding the shuttle. This would also be true if the behavior of riding the shuttle is considered to conflict with a visitors desired experiences and activities (e.g. the experience of being in control of things that happen or the activity of driving the road).

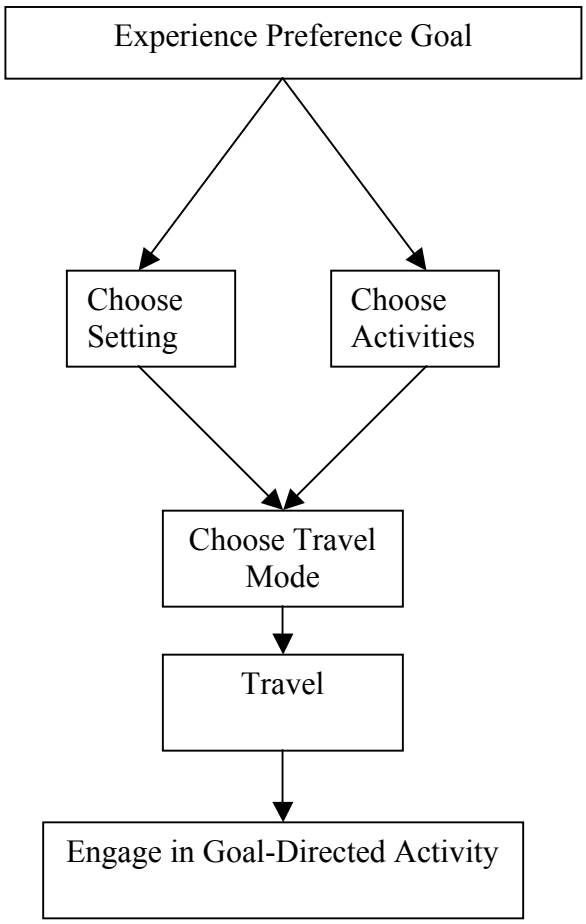

Figure 2: The Hierarchy of Goals of National Park Visitors

If, however, the individual does not directly relate the choice of travel mode to the overarching goals of experience preference and chosen activities, but rather considers it

simply a mechanism to get to the destination where they will engage in their desired activities, then travel mode choice would exist at a lower level of the program component of the goal hierarchy (where decisions are more salient and deliberate) verging on the sequence level (where decisions are less salient and automatic). In this instance, these higher-order goals may not have an effect on visitors conscious attitudes toward shuttle use, but they may still have effects on intention to ride through automatic mental processes (Figure 3). In other words, while the decision on shuttle use at Glacier National Park may be a largely rational decision, automatic mental processes associated with higher order goals may also influence intention to ride.

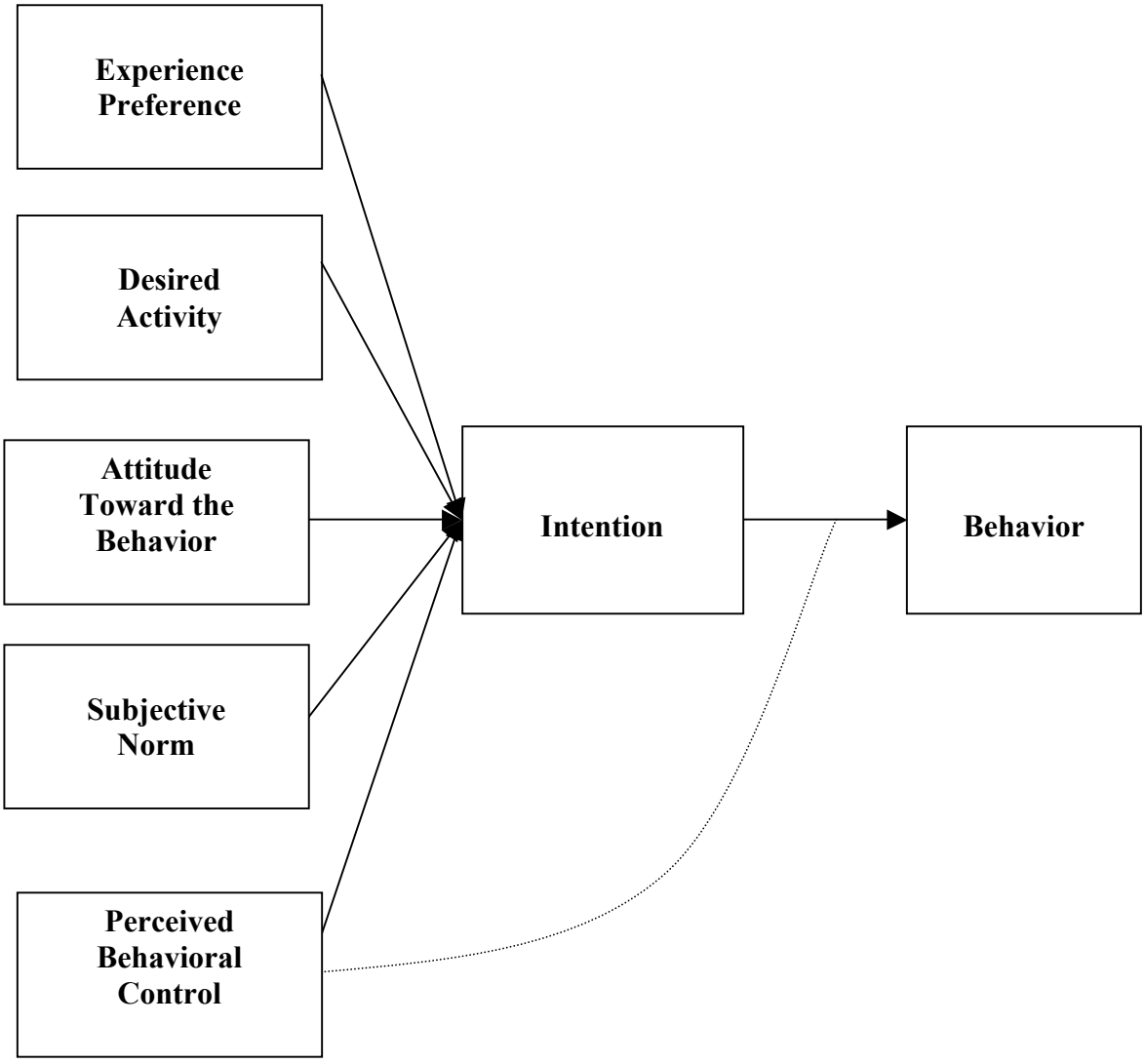

Figure 3: Theory of Planned Behavior with Higher Order Goals of National Park Visitors

Research Questions

Based on what we know about the recreation experience in general as well as what we know about the experience of visiting GNP, the Theory of Planned Behavior provides an appropriate conceptual framework from which to study what factors visitors consider when deciding whether or not to ride a shuttle at GNP. Using the TPB as a guide, this project explores visitors' beliefs about the shuttle at GNP (and how it relates to their park experience), what influence others have on that decision (measured within the model as intention), and what constraints visitors may perceive to using the shuttle. Additionally, this study seeks to understand the effects of hierarchical goals on the rational decision-making process. With this in mind, this research project centers on the following research questions:

1. What is the nature and strength of visitors' beliefs about the outcomes of using a shuttle in GNP?
2. What normative beliefs do visitors have regarding shuttle use at GNP and how motivated are they to conform to them?
3. What factors do visitors believe could facilitate or constrain their ability to use a shuttle at GNP?
4. How well do visitors attitudes, subjective norms, and perceived behavioral control predict their intentions to ride a shuttle at GNP?
5. What relationship, if any, exists between the desired experiences, desired activities, and select characteristics of visitors to GNP and their attitudes toward and intention to use a shuttle within the park?

6. Do visitors to GNP follow their stated intentions to ride a shuttle during their visit? How significant is perceived behavioral control in predicting behavior above and beyond the effect of behavioral intentions?

CHAPTER 3: CONCEPTUALIZING THE STUDY

The purpose of this chapter is to present the research hypotheses and how the variables to be tested were operationalized. The chapter begins with a discussion of the research hypotheses derived from the questions raised from the review of literature. This is followed by a description of a preliminary study conducted at Glacier National Park by Freimund et al. (2006c) in which visitors' beliefs about riding a shuttle in GNP were explored. Finally, the chapter concludes with a description of how the results of the 2006 study by Freimund et al. were used in operationalizing the variables.

Research Hypotheses

The research questions discussed in the previous chapter suggest several hypotheses that are appropriate for this project. The research hypotheses for this project are as follows:

H1: The constructs of the theory of planned behavior will explain a significant amount of variance in behavioral intentions.

H2: Recreation experience preference will explain a significant amount of variance in behavioral intentions.

H2: Activity choice will explain a significant amount of variance in behavioral intentions.

H3: Group size will explain a significant amount of variance in behavioral intentions.

H4: Number of small children (under 10 years of age) in travel group will explain a significant amount of variance in behavioral intentions.

H5: The number of days a visitor spends in GNP will explain a significant amount of variance in behavioral intentions.

H6: Behavioral intentions and perceived behavioral control will be significant in predicting shuttle-use behavior.

Identifying Visitors' Beliefs About Riding a Shuttle at GNP

In 2006, Freimund et al. (2006c) conducted a preliminary study (based upon the theory of planned behavior) to explore visitors' beliefs about riding a (then) proposed shuttle at Glacier National Park. In the study, visitors discussed several beliefs about riding a shuttle in GNP. In fact, when asked if they would be willing to ride a shuttle in GNP, visitors considered aspects of their desired experiences and activities as well as the actual experience of riding a shuttle.

When asked if the shuttle would be consistent with the type of social experience (social/solitude) they desired when visiting the park, visitors had varying opinions. Some visitors who desired an experience of solitude did not see the shuttle as being consistent with that experience. For example, one visitor to the park stated that the two experiences would not be compatible "because you would be crammed in with people." Another visitor described it as a desire for privacy.

> "I just like the privacy of having my own car and stopping when I want to stop."

Other visitors who were seeking solitude, however, thought taking the shuttle at GNP could be consistent with that experience. For these visitors, the shuttle was seen as a mode for getting to the location where they would experience solitude. As one visitor explained,

> "I don't think that the shuttle or driving in the car is necessarily the solitude. I think you get if from the park itself, just getting out and going into the park hiking and stuff."

Another visitor explained it more concisely, stating: "When you get off the bus you can do as you please."

For those visitors who desired a social experience (or a mix of social and solitude), the need to ride with people they did not know was seen as a positive aspect of riding the shuttle. As one visitor explained,

> "I think it might enhance [my experience]…You know the chance for a little social interaction with somebody else…. So if I was forced to sit next to you, I would definitely ask you where you came from I guess."

Other visitors saw riding the shuttle as an opportunity to spend time with family.

> "You get to ride together. I don't have to worry about driving myself. I can spend more time with my kids or observing nature.

Many visitors to GNP talked about coming to the park specifically to view the scenery and wildlife. For these visitors, the shuttle was seen as a way for the entire family (including the person who normally drives) to be able to view the park. For example, one visitor to the park stated:

> "Then we could all watch instead of one person having to drive and one person saying 'Oh, looky over there.' It would be easier for everyone to be able to look for wildlife and to see things that maybe the other person missed."

Other visitors, however, stated that they could have the same experience of viewing scenery and wildlife from either the bus or their car.

> "I think our family would still gain the beauty of the park irregardless of the shuttle or driving… I don't think the experience would be any different.

Finally, some visitors thought riding the shuttle could detract from their experience of viewing the scenery.

> "I had my little girl, she wanted to look at one of the flowers, a blue flower. So we stopped and let her look at the flower. It's just things like that, you have a little more control over the experience."

In addition to discussing the types of experiences they hoped to have while visiting GNP, visitors also considered how consistent riding the shuttle would be with their desired activities. For example, one visitor discussed the benefits to using a shuttle for backpacking trips.

> "If we were doing backpacking it sounds like it would be really useful to be able to park at someplace central where you don't have to worry about parking your car. I mean we can just take a shuttle to where you are starting off and you can also come out someplace else and take it back. If we were doing backpacking it would be very useful."

Another visitor discussed how using a shuttle might allow them to hike trails at the time of their choosing.

> "We could stop at the trailheads on the day that we wanted to do it rather than taking the trail when a parking spot was available."

In addition to considering how using the shuttle would impact their desired experiences and activities, many visitors discussed aspects of road conditions and the shuttle as factors that would influence their decision on riding the shuttle. Visitors listed parking, traffic congestion, and convenience as important factors in their decision.

One visitor to Logan Pass explained how lack of available parking had affected his experience.

> "I think [the shuttle] would improve [parking] greatly, even here at the divide. It was so packed I finally told Mom and [my daughter] to jump out. 'I'm going to check around a while. If I find nothing I will meet you here in 15 minutes and I just won't go up."

Another visitor discussed how lack of available parking had prevented her from going on specific hikes.

> "But there were times when we wanted to do certain hikes and there was no place to park at that time so we ended up coming up over the road several times to get to the trailhead when we could park."

Visitors also indicated that they would consider traffic congestion associated with road construction when deciding whether or not to use a shuttle at GNP. The following two visitors discussed how the presence of road construction would influence their decision.

> "I would like the option to drive over the mountain but now that we've done it, and if it is for a good reason (i.e. highway construction) then, hey, I can understand that."

> "[I would take the shuttle] principally because of the expected congestion as a result of the construction being done."

Other visitors discussed their desire for convenience as a factor they would consider when deciding whether or not to use a shuttle at GNP. For example, one visitor discussed how using the shuttle might make it easier for friends a family to travel together through the park.

> "If there was a large group of us and we didn't want to take a bunch of different cars, I could see using the shuttle. If we had a couple of families it would probably be fun."

Another visitor discussed the convenience of being able to use a shuttle when visiting the park in a recreational vehicle.

> "We actually rented a car in Kalispell and then came up here [because] the RV is too long to bring up this road. If we knew that there would be a free shuttle to take we would have parked the RV in the camp and taken the shuttle. That would have been a fantastic way to go."

Some visitors discussed how concerns for the environment would influence their decision of whether or not to ride a shuttle in GNP. On visitor, for example, explained how they thought riding the shuttle would help the environment.

"We're really into ecology. So if you had a shuttle we would take it because we really think that's the best way to take care of our environment."

Other visitors, however, were less concerned about the environment. For example, one visitor described how he did not feel affected by negative impacts on the environment.

"I guess being from Montana we don't fight the air as much…I guess it doesn't seem to impact us even though it does the world. I suppose that's not the most wonderful view, but that's the truth."

In fact, other visitors expressed defiance against the responsibility to ride the shuttle for environmental reasons.

"…If it's for a good reason (i.e. highway construction) then, hey, I can understand that. If it is because a tree hugger wants it [though], I'm going to change all my answers."

The visitors discussed above held a variety of beliefs about the outcomes of and reasons for riding the shuttle. Specifically, visitors were concerned with:

- Social aspects of riding the shuttle
- The ability to have their desired experiences
- The ability to engage in their desired activities
- The ability to stop in the locations they wanted

- Being able to look at the scenery (as opposed to driving)
- The effects of the shuttle on parking conditions
- The effects of the shuttle on traffic conditions due to construction

The Role Others Play in Decisions on Using a Shuttle in GNP

Visitors also considered the influence of others when talking about the decision to use a shuttle within the park. Visitors discussed the importance of the group they are traveling with, the influence of park management, and considerations for the environment when determining their willingness to ride a shuttle at GNP.

For example, one visitor stated that although he would prefer to drive his motorcycle over the GTSR, he would be willing to take a shuttle at another time for his wife's benefit.

> "I think one time driving over would be nice, but the next time over taking the shuttle so my shutter bug here can take pictures."

Another visitor, however, indicated that her spouse would influence her not to take the shuttle.

> "[Other people] would probably influence us not to take the shuttle. My husband wouldn't go for it."

The desire of park managers for visitors to ride the shuttle was also discussed as a reason to take the shuttle in GNP. For example, when one visitor was asked why he

would choose to ride a shuttle in GNP, he responded, "Probably because it would be recommended by the park service."

These statements by visitors reveal the importance of specific others in visitors' decisions on whether or not to ride the shuttle. Specifically, visitors mentioned the importance of:

- Family
- Members of their travel group
- Park Managers

Visitors' Perceived Control over Riding a Shuttle at GNP

Finally, many visitors explained that much of their decision of whether or not to use a shuttle in the park would be dependent upon the feasibility of using the shuttle system. For example, one visitor had concerns about adequate capacity.

> "[The shuttle would need] enough capacity to when one came along they had seats available. Because you don't want to get off at stop number 12 and wait for the next bus to come along, and the next five busses are filled up."

Other visitors had concerns about knowing how to navigate the system. For example one visitor to the park stated,

> "The reason we don't take the [Red Bus Tour] now is we don't know how to do it….If you knew these things are going to be available and there [are] enough shuttles [for all] the people it would work."

Another visitor to the park discussed the difficulty of using the shuttle for people who are entering the park through one entrance and leaving through another.

> "Well, if I was just going to stay in this park, on my vacation I'd probably say the shuttle would be a great thing. But I'm just staying here for a little bit and then we're going to Canada…. I kind of need that car."

The above discussion reveals several concerns that visitors had with their ability to ride a shuttle in Glacier National Park. Specifically, visitors were concerned about:

- Capacity-the ability to get on the bus they want
- Understanding how to use the shuttle system

The results of this study indicate that the TPB is an appropriate theoretical framework for understanding what factors visitors consider when deciding whether or not to ride a shuttle at GNP. The themes revealed in the preliminary study provide a solid foundation from which to understand the conscious, deliberative component of decision-making regarding shuttle use at GNP.

Operationalizing the Variables

According to Ajzen (2005), when designing a TPB survey instrument it is important to focus on consistency between the target, action, context, and time. Thus, for purposes of the proposed study, the behavior of interest is riding the shuttle at GNP during the visit in which visitors are contacted.

In order to properly operationalize each of constructs of interest to this study, all TPB questionnaire items were compatible with the specific behavior of interest. Each of

the questionnaire items were constructed using findings of the studies conducted at GNP that were discussed in the previous section.

In addition to questions related to TPB, both surveys included questions about visitor characteristics including descriptive characteristics of the individual visitor as well as their group. Furthermore, the follow-up survey included questions regarding the logistics and quality of their experience with the shuttle at GNP.

Attitudes Toward Shuttle-Use

As discussed above, findings of the pilot study by Freimund et al. (2006b) indicate that visitors to GNP considered aspects of their desired experience and their chosen activity as well as characteristics of the shuttle system when asked about their willingness to use a shuttle in the park. In order to determine visitors' attitudes toward riding a shuttle in GNP using a TPB questionnaire, both the strength of behavioral beliefs as well as an evaluation of their outcomes needed to be measured (Table 1). Questions were asked using a seven-point Likert scale with behavioral beliefs being ranked from extremely unlikely to extremely likely and outcome evaluations being ranked from extremely bad to extremely good (ranking terms taken from Ajzen, 2006).

Table 1: Example questions for Attitude Component of Survey Instrument

Behavioral Beliefs	**Outcome Evaluations**
Riding the shuttle at GNP during this trip will allow me to meet new people	Meeting new people is:
Riding the shuttle at GNP will help me to achieve the experience I desire	Achieving my desired experience is:
Riding the shuttle at GNP will help me to engage in my chosen activity	Engaging in my chosen activity is:
Riding the shuttle at GNP will improve environmental conditions in the park	Improving environmental conditions in the park is:

Subjective Norms

Similar to the attitude component of the model, measurement of the subjective norms component required a pair of questions for each referent. Again, using a seven-point Likert scale, visitors were asked questions about the strength of their normative belief (I should to I should not) and their motivation to comply with the wishes of that referent (rated not at all to very much). Results of the study by Freimund et al. (2006b) were used to construct questions of referents (Table 2).

Table 2: Example Questions for Subjective Norms Component of Survey Instrument

Normative Beliefs	**Motivation to Comply**
People I am visiting the park with think (I should/should not) use the shuttle during this visit to GNP.	When it comes to riding a shuttle in GNP, how much do you want to do what other members of your group want you to do?
Park managers think (I should/should not) use the shuttle during this visit to GNP.	How much do you want to do what park managers want you to do?
My significant other thinks (I should/should not) use the shuttle during this visit to GNP	How much do you want to do what your significant other wants you to do?
My peers think that (I should/should not) use the shuttle during this visit to GNP.	How much do you want to do what your peers want you to do?

Perceived Behavioral Control

Once again, when measuring the components of perceived behavioral control, TPB instruments included two components: control belief strength and control belief power (Table 3). Each component was rated on a seven-point Likert scale with control belief strength being measured from strongly disagree to strongly agree and control belief power being measured from much more difficult to much easier.

Table 3: Perceived Behavioral Control Sample Questions for Survey Instrument

Control Belief Strength	Control Belief Power
I expect the shuttle will stop at the locations I want to visit along the Going to the Sun Road	Stopping at the locations I want to visit will make it (much more difficult/much easier) for me to take the shuttle at GNP during this visit
I expect I will be able to get on the bus that I want	Being able to get on the bus that I want will make it (much more difficult/much easier) for me to take the shuttle at GNP during this visit
I will understand how to utilize the shuttle system at GNP	Understanding how to utilize the shuttle at GNP will make it (much more difficult/much easier) for me to take the shuttle at GNP during this visit.

Behavioral Intentions

The items used to evaluate the first three research questions were used to determine attitudes, subjective norms and perceived behavioral control. In order to evaluate the predicted relationship between these constructs and behavioral intentions, visitors' intention to ride the shuttle was also measured. Based on Ajzen's (2006) recommendation, multiple questions were included in the instrument to measure intention to ride the shuttle. These questions were also rated on a seven-point Likert scale. Examples of questions that measured intention included: "I intend (plan/will try) to ride the shuttle at GNP during this visit to the park."

Experience Preference and Activities

To assess which experiences participants desired when visiting GNP, the survey instrument included a series of questions about experience preference. Items for this section of the survey were taken from the previous study conducted by Miller et al. (1997) at GNP. Examples of items included in this section are: to feel my independence, to experience solitude, to be near considerate people, and to think about my personal values (Miller at al., 1997).

To better understand what activities visitors engaged in while at GNP, participants were asked to review a list of available activities and to check the ones in which they planned to engage or had already engaged in during their visit to GNP. Examples of activities that were included in the list are: hiking, camping, viewing scenery, picnicking, and swimming.

Visitor Characteristics

Visitors were asked to answer a series of questions about themselves and their personal travel group. Specifically, visitors were asked to indicate the size of the travel group, the ages of any children traveling with them in the park, and the extent of their previous experience with mass transportation.

Shuttle-Use Behavior

To test if visitors followed their stated intentions to ride the shuttle, survey participants were mailed a follow-up survey shortly after their visit. This second survey

asked visitors if they rode the shuttle while visiting GNP as well as some evaluative questions about the experience of riding the shuttle.

Intention to ride the shuttle was operationalized on the initial survey using a seven-point Likert-type scale. One example of a question that was used in measuring intention to ride the shuttle would be: "I intend to ride the shuttle at GNP during this visit to the park" which would be scaled from extremely likely to extremely unlikely.

The measure of perceived behavioral control from the first survey was used to test this question.

CHAPTER 4: STUDY METHODS

The purpose of this chapter is to provide an overview of the research methodology used to address the hypotheses presented in the previous chapter. This study used a self-administered survey comprised of two instruments: an onsite questionnaire and a take-home questionnaire. A sample of GNP visitors was drawn during pre-determined and randomly chosen sample locations, days, and times between August 18 and September 2, 2007. Survey methods were based upon a modified Tailored Design Method (Dillman, 1999) Finally, statistical analysis was performed using the Statistical Package for the Social Scientists (SPSS) version 13.0.

Survey Instrument

The questionnaires were constructed combining and modifying aspects of pre-existing instruments that had been previously tested for validity and reliability. Questionnaire items were submitted to GNP managers and the United States Office of Management and Budget (OMB) for refinement and approval.

Once developed, the survey instruments were pre-tested twice. The first pre-test was a participatory test conducted with a group of 9 graduate students from the University of Montana. This test resulted in a small number of changes to the questionnaire with respect to question wording and formatting for clarity. The second pre-test was a field test consisting of 9 visitors to Glacier National Park conducted to estimated burden time of the questionnaires. OMB requirements limit the size of pre-test samples to nine.

The onsite survey instrument (Appendix A) consisted of 25 questions and had an estimated visitor burden time of ten minutes. The onsite questionnaire included questions

on trip characteristics, group characteristics, desired recreational experience, and visitors' perceptions of the shuttle system.

The take-home questionnaire (Appendix B) was comprised of 24 questions and had an estimated burden time of approximately six minutes. Questions included in the second questionnaire were centered on visitor use of the shuttle system and visitor demographic data. The format of the questions on both instruments included fixed choice, Likert scale, and open-ended questions.

Sampling Procedures

Since the Going to the Sun Road shuttle system was designed to remove ten percent of vehicles from the road, the sample plan was designed to maximize the likelihood of balancing the number of shuttle riders and non-riders in the sample. Also, due to the condensed sample schedule, sampling was conducted in high-use areas to ensure an appropriate sample size. Therefore, sample locations for this study included the Apgar Village Area (including the Apgar Visitor Center, Apgar Transit Center and Apgar Campground) and the area surrounding the Logan Pass Visitor Center (including the Logan Pass Shuttle Stop).

Sampling was conducted during each day of the sample period. Sample times were first designated by morning (8:00 am – 2:00 pm) and afternoon (2:00 pm to 8:00 pm) shifts. To construct the sampling plan, daily sample locations were selected randomly without replacement. Then, sample times were chosen at random for the first sample day in each location. Sample times for subsequent days were rotated for each location. Once on site, field researchers approached as many people as possible during the assigned sampling days/times. Only one adult member per household was selected to

participate in the study (by selecting the person whose birthday was closest to the date of contact).

Visitors were approached onsite and asked, using a script (Appendix C), to participate in the study. If they agreed, they were given a clipboard containing a postcard (Appendix D), the onsite questionnaire, and a postage paid envelope containing the mail-back questionnaire. Visitors were asked to fill out their name and address on the postcard and then fill out the on-site questionnaire. When visitors had completed the on-site questionnaire, the field researcher collected the completed questionnaire and postcard and instructed the participant to complete and mail the follow-up questionnaire at the conclusion of their trip. (Visitors could also leave the completed questionnaire at visitor centers or with campground hosts.)

Response Rates

Eighty-six percent of the 585 contacted on-site agreed to participate in the study. Of the 502 who agreed to participate, 11 had undeliverable addressed and an additional 14 refused to provide an address. One hundred and eighty-seven participants responded to the mail-back survey without any further contact for an initial response rate of 37 percent. Response rates increased after each of a series of mailings. Specifically, 60 participants responded after receiving the replacement postcard, 95 responded after receiving a replacement questionnaire, and 34 responded upon receiving a second replacement questionnaire. The final response rate was 75 percent (376 completed surveys, margin of error +/- 5 percent; Welch and Comer, 1988) of those who agreed to participate in the study or 64 percent of all visitors contacted.

Non-response Bias Check

To assess if any response bias existed, comparisons were made between participants and non-participants as well as participants who did/did not return the mail-back questionnaire. Data on group size and group type were recorded for visitors who refused to participate in the study by field researchers for use in calculating non-response bias. Questions contained in the on-site questionnaire were used to determine non-response bias between those who did and did not return the second survey.

No significant differences were found with respect to the type of personal travel group among participants and non-participants. Differences were found, however, in the mean size of personal travel group with participants belonging to a slightly larger personal travel group than non-participants (mean group size of 3.64 and 2.88 respectively, $t=5.49$, $P<0.05$).

Significant differences were also found between survey participants who did and did not respond to the mail-back survey. Respondents, on average, were members of smaller personal travel groups (average 3.36 for respondents and 4.45 for non-respondents). Additionally, respondents reported longer stays in the park (average 3.83 days for respondents compared to 3.15 days for non-respondents). Finally, respondents reported a higher intention to ride the free, park-operated shuttle in GNP than non-respondents (mean scores of 4.23 and 3.14 respectively on 1-7 Likert scale with 1 be very unlikely to ride and 7 being very likely to ride).

Limitations

As with any study employing on-site sampling, sampling only park visitors excludes those individuals who are perhaps displaced from the park for various reasons.

In addition, because of a protracted OMB approval process, sampling was done during a condensed (16-day) sampling period that may have excluded groups that visit the park during other times.

Also, since sampling was concentrated on the west side of the park, visitors accessing only areas of the park east of (but not including) Logan Pass were not sampled. It should be noted, however, that 53 percent of participants who indicated that they had used the shuttle during their visit also indicated using one or more shuttle stops east of Logan Pass.

Additionally, since the system was designed to accommodate only a small percentage of visitors to the park, the sample plan was designed to maximize the number of shuttle riders sampled and thus balance the sample between riders and non-riders. Thus, shuttle riders were over sampled while non-riders were under sampled. Therefore, results of this study may be more generalizable to riders than non-riders. However, that very few differences existed between the two groups.

CHAPTER 5: DESCRIBING THE SAMPLE

The purpose of this chapter is to describe the sample population. Information presented in this chapter includes: participant, group, and trip characteristics; the types of recreation experiences and activities sought by participants; and how and for what purposes participants used the Going to the Sun Road shuttle system.

Participant Characteristics

Survey participants were asked to respond to a series of questions about their personal characteristics. Fifty-three percent of participants were female and 47 percent were male. The vast majority (98 percent) of participants were Caucasian, and sixty percent had a Bachelor's degree or higher. Additionally, 50 percent of respondents reported being employed and 40 percent reported being retired (Table 4).

Visitors to the park were highly educated with 71 percent reporting having graduated from college (including two-year degrees) or graduate school. This is less than previous studies which have reported almost 90 percent of visitors having college educations (Hakida 1994).

Table 4: Participant Characteristics

Participant Characteristic	N	Percent*
Gender		
Male	163	46.7
Female	186	53.3
Ethnicity		
Hispanic or Latino	4	1.2
Race		
Asian	5	1.5
American Indian or Alaska Native	1	0.3
Black or African American	2	0.6
Native Hawaiian or other Pacific Islander	1	0.3
Caucasian/ White	329	96.8
More than one	2	0.6
Highest Level of Education Completed		
Less than high school graduate	0	0
High school graduate (including GED)	27	7.6
Some college, no degree	75	21.2
Two-year college degree (Associates degree)	36	10.2
Four-year college degree (Bachelor's degree)	103	29.2
Graduate or professional degree	112	31.7
Employment Status		
Employed (full or part-time)	178	50.0
Homemaker	14	3.9
Full-time student	7	2.0
Not employed	3	0.8
Retired	144	40.4
Other	7	2.0
Decline to Answer	3	0.8
Income		
Less than $25,000	25	7.3
$25,000 to $49,999	63	18.4
$50,000 to $74,999	71	20.8
$75,000 to 100,000	53	15.5
$100,000 or more	78	22.8
Decline to answer	52	15.2

*Percent of participants who answered the question and who fully participated in the study returning both the on-site and the mail-back questionnaires.

Group Characteristics

The majority of participants were traveling with groups that included family members (Family 68.6 percent, Family and friends 9.3 percent). The average group size was 3.6 with many groups consisting of small children. The percentages of groups including family members and the mean group size are both consistent with previous studies conducted at GNP. (Freimund et al. 2006b) Thirty-four percent of participants reported that one or more members of their personal travel group had the ability to walk only limited distances (Table 5).

Table 5: Group Characteristics of Participants

Group Characteristic	N	Percent	Mean
Group type*			
Alone	20	4.3	
Family	314	68.6	
Friends	70	15.2	
Family and friends	43	9.3	
Business associates	3	0.6	
Other	7	1.5	
Group size*	459		3.6
Number of small children*			
Children under six years old	39	10.1	1.5
Children between six and ten years old	39	10.1	1.4
Children between 10 and 18 years old	60	16.0	2.0
Membership in organized groups*			
Commercial guided tour	24	5.4	
Educational group (school, etc.)	7	1.6	
Other organized group (church, business, etc.)	10	2.3	
Individuals in group with ability to walk only limited distances**	117	33.5	
Physical limitations on walking distance**			
Pain/discomfort	82	22.3	
Use of wheelchair	3	0.5	
Use of walker/cane	7	1.6	
Have a breathing or respiratory condition	27	6.9	
Have small children	13	3.6	
Prefer not to walk	10	2.7	
Other	15	3.8	
Encountered access problems as a result of physical limitation**	8	6.6	

* Calculated from all participants who returned the on-site questionnaire
**Calculated from all participants who fully participated in the study returning both the on-site and the mail-back questionnaires

Trip Characteristics

Forty-five percent of participants who returned the on-site survey were return visitors to the park. Additionally, over sixty-five percent of those who completed both surveys reported entering the park with some type of National Park Service Entrance Pass (including Glacier National Park Pass, National Park Service Pass, and Golden Age and

Golden Eagle passes). Participants reported spending an average of 3.7 days in the park. Additionally, sixty percent of respondents indicated staying one or more nights within the park with an average stay of four nights (Table 6).

Table 6: Participant's Trip Characteristics

Trip Characteristic	N	Mean	Percent
Return visitors*	158		45.1
Use of National Park Service entrance pass**	225		65.5
Number of days spent in park*	478	3.7	
Number of nights spent in park*	471	4.0***	
Lodging*			
Primary residence	34		6.5
Secondary residence in the area	11		2.0
Residence of friend or relative in the area	32		6.1
Campground in Glacier National Park	151		29.6
A lodge/motel in Glacier National Park	104		19.3
A backcountry chalet in Glacier National Park	14		3.0
Local motel, hotel, cabin, cottage, or resort outside park	148		27.4
Campground outside of Glacier National Park	30		5.6
Other	11		0.6

* Calculated from all participants who returned the on-site questionnaire
**Calculated from all participants who fully participated in the study returning both the on-site and the mail-back questionnaires
***Average number of nights spent in the park among those who reported staying one or more nights

Recreation Experience Preference

Participants rated a series of questions on their recreation experience preference on a five-point scale (with one being not important and five being extremely important). Visitors rated “To see scenic beauty”, “To be close to nature”, and “To see wildlife” as the most important experiences to them during their visit to Glacier National Park (Table 7).

Table 7: Participant Scores to Recreation Experience Preference Questions

Recreation Experience	N	Mean	Standard Deviation
To see scenic beauty	468	4.64	0.64
To be close to nature	463	4.18	0.88
To see wildlife	463	4.16	0.90
To do something with your family	462	4.04	1.19
To learn about things at Glacier National Park	471	3.81	1.01
To be near considerate people	466	3.79	1.08
To photograph wildlife	468	3.67	1.17
To be in a place that is quiet	461	3.67	1.01
To be away from crowds of people	464	3.64	1.12
To be where things are fairly safe	464	3.54	1.13
To experience solitude	456	3.36	1.14
To feel my independence	460	3.23	1.19
To be in control of things that happen	450	3.12	1.17
To think about your personal values	463	3.01	1.24

A principle component factor analysis was conducted to discern if an underlying structure existed within the REP scale. Factor analysis (using a Varimax rotation) revealed four distinct factors (Table 8).

Table 8: Rotated Component Matrix for REP

	Factor Loadings			
	Solitude	Nature Appreciation	Secure/Social	Personal Control
To be in a place that is quiet	0.809			
To experience solitude	0.804			
To be away from crowds of people	0.700			
To feel my independence	0.633			
To see wildlife		0.831		
To photograph wildlife		0.781		
To be close to nature		0.684		
To see scenic beauty		0.584		
To learn about things at Glacier National Park		0.504		
To be where things are fairly safe			0.749	
To think about your personal values			0.584	
To do something with your family			0.573	
To be near considerate people			0.565	
To be in control of things that happen				0.836

* n=389

The first factor was labeled "Solitude." This factor included experiences of solitude, being away from crowds of people, feeling independence, and being in a place that was quiet.

The second factor was labeled "Nature Appreciation." This factor included experiences of being close to nature, seeing and photographing wildlife, viewing scenic beauty, and learning about things at GNP.

The third factor was labeled "Secure Social." This factor included experiences of being near considerate people, doing something with family, being in a place that is fairly safe, and thinking about personal values. The final factor was labeled "Personal Control" and was comprised of a single experience of being in control of things that happen.

Recreation Activities

Participants were also asked to indicate which activities they planned to engage in during their visit to Glacier National Park. The most popular activities among study participants were auto touring (79.9%), watching wildlife (67.4%) and visiting visitor centers (62.4%) (Table 9).

Table 9: Activities Engaged in by Participants

Activity	N	Percent*
Driving: Auto touring	397	79.9
Watching wildlife	305	67.4
Visiting visitor centers	310	62.4
Photography	305	61.4
Walking/running	302	60.8
Hiking	298	60.0
Dining out	274	55.1
Picnicking	175	35.2
Viewing scenery	145	29.2
Camping: in vehicle	100	20.1
Camping: in tent	88	17.7
Ranger led program	78	15.7
Backpacking	52	10.5
Swimming	51	10.5
Commercial tour	49	9.9
Fishing	43	8.7
Guided hike	37	7.4
Horseback riding	35	7.0
Bicycling	32	6.4
Driving: motorcycle	29	5.8
Camping: backcountry	21	4.2
Orienteering	11	2.2
River rafting	6	1.2
Boating	4	0.8
Climbing	2	0.4
Shopping	1	0.2

Cluster analysis was performed (using the K means method) to determine "activity types" of study participants. Participants were segmented based to their answers to the question "Please check each activity that you plan to do (or have participated in) while in Glacier National Park during this visit." The analysis was performed by directing the statistical program to calculate two, three, and four clusters.

Each segmentation was evaluated to determine which did the best job of characterizing the data. The analysis resulting in four distinct clusters was chosen. The four segments revealed were: "Uncommitted Recreationists" (those who have relative undefined activity goals, n=169), "Diverse Recreationists" (those who planned to/engaged in a wide variety of activities in both developed and natural surroundings, n=170), "Immersion Recreationists" (those who primarily planned to/engaged in camping, hiking, backpacking, and back-country camping, n=71), and "Front-country Recreationists" (those who primarily planned to/engaged in auto-touring, photography, wildlife, visitor centers, n=171) (Table 10).

Table 10: Percent of Respondents Engaging in Specific Activities by Activity Type

	Percent Planning to/Engaging in Activity			
	Uncommitted	Diverse	Immersion	Front-country
	n=173	n=193	n=77	n=138
Auto-touring	32.5	90.6	66.2	82.5
Dining out	11.8	78.8	46.5	50.9
Swimming	2.4	14.7	22.5	3.5
Picnicking	7.1	70.6	42.3	7.6
Camping in vehicle	6.5	24.1	16.9	21.1
Walking/running	10.7	90.6	64.8	49.1
Commercial tour	3.6	12.4	2.8	9.4
Fishing	1.8	10.6	18.3	5.3
Guided hike	0.6	15.3	7.0	2.3
Backpacking	3.6	9.4	39.4	1.2
Photography	4.1	79.4	60.6	70.2
Camping in tent	4.1	4.1	100	1.8
Wildlife	3.0	89.4	80.3	70.8
Ranger led programs	2.4	28.2	14.1	9.4
Hiking	17.8	87.6	94.4	30.4
Visitor center	4.1	81.8	59.2	71.3
Back-country camping	1.8	0.6	21.1	1.2
Scenery	5.3	30.6	45.1	30.4

Visitor Responses to Theory of Planned Behavior Constructs

As discussed in Chapter 3, participants were asked a series of questions to measure the constructs of the Theory of Planned Behavior (Ajzen 2005a). Specifically, visitors were asked about their attitudes toward shuttle use, the influence of others on their decisions to ride the shuttle, and the factors that might facilitate or constrain their ability to ride the shuttle at GNP. Visitors were also asked about their intentions to ride the shuttle, and whether or not they actually rode the shuttle during their visit to GNP.

Attitudes

Participants were asked about a series of possible outcomes to riding the shuttle at Glacier National Park. For each outcome participants were asked how likely that

outcome would be as a result of riding the shuttle (on a seven-point scale with -3 being very unlikely and +3 being very likely) and how they would evaluate that outcome were it to happen (on a seven-point scale with -3 being very bad and +3 being very good).

The measure for attitude toward each of the possible outcomes is comprised of a person's belief about the likelihood of the outcome and their evaluation of that outcome. In other words, a person who believes a specific outcome is likely and also evaluates that outcome as good will have a positive attitude toward that aspect of riding the shuttle. Similarly, a person who rates an outcome as unlikely and bad will also have a positive attitude toward riding the shuttle with respect to that particular outcome (i.e. they believe that something that they consider to be bad will not happen while riding the shuttle). If, however, a person evaluates an outcome as unlikely but good or likely but bad, they will have a negative attitude toward riding the shuttle with respect to that specific outcome. The equation for calculating the direction and strength of the individual attitude is:

$$a_i = B_i E_i$$

where B is the individual's belief about the outcome and E is their evaluation of the outcome.

To aid in interpretation of attitude composites, the scales for beliefs and attitudes were coded on a scale from negative three to positive three with a true mid-point existing at zero. A participant who rated an outcome as very good (+3) and very likely (+3) would have a strong positive attitude (composite score +9) toward that aspect of riding the shuttle (since something very good was very likely to happen). Similarly a person who rated an outcome as very bad (-3) and very unlikely (-3) would also have a strong

positive attitude (composite score +9) toward that aspect of riding a shuttle (since something very bad wouldn't happen).

In contrast, a person who evaluated an outcome of riding the shuttle as very likely (+3) but very bad (-3) would have a strong negative attitude (composite score -9) toward that aspect of riding the shuttle (since something bad would happen). The converse is also true. A person who evaluated an outcome as very unlikely (-3) but very good (+3) would have a strong negative attitude (composite score -9) toward that aspect of riding the shuttle (since something good wouldn't happen).

The closer visitors rate their beliefs and evaluations of specific outcomes to the neutral point ("neither likely nor unlikely" and "neither bad nor good", both of which would be rated 0) the weaker their attitude becomes. Furthermore, if the respondent rates either their belief about the likelihood of the outcome or their evaluation of the desirability of that outcome as neutral, their attitude toward that aspect of riding the shuttle will be neutral (composite score 0). Thus the possible range for individual attitude scores is negative nine to positive nine.

Visitors' attitudes toward shuttle use were generally positive with each of the composite means being greater than zero. There was, however, a large amount of variance in both the belief and evaluation scores as well as the composite scores. The outcomes resulting in the highest composite scores were "benefit the environment at GNP" (6.08), "alleviate parking issues within the park" (5.39), and "be a safe way to travel the Going to the Sun Road" (5.25) (Table 11).

Table 11: Mean Scores on Attitude Scale Items

Possible Outcome	Belief about Outcome		Evaluation of Outcome		Composite*	
	Mean	*s.d.*	*Mean*	*s.d*	*Mean*	*s.d.*
Benefit the environment at GNP	2.04	1.54	2.35	1.14	6.08	3.61
Alleviate parking issues within the park	1.90	1.56	2.14	1.26	5.39	3.74
Be a safe way to travel the Going to the Sun Road	1.76	1.64	2.05	1.37	5.25	3.81
Relieve me of the responsibility of driving in GNP	1.88	1.68	1.89	1.43	5.15	4.01
Allow me to see the sights at GNP	1.55	1.65	2.04	1.34	4.55	3.96
Shorten traffic delays in the park due to construction	1.44	1.76	1.95	1.33	4.50	4.12
Prevent me from having to deal with undesirable traffic conditions at GNP	1.42	1.81	2.05	1.33	4.18	4.17
Be a comfortable way to travel through the park	1.38	1.67	1.86	1.37	4.05	3.86
Reduce my stress while visiting GNP	1.07	1.93	1.81	1.41	3.66	4.31
Allow me to go to the areas I want in GNP	1.24	1.79	1.74	1.48	3.61	3.94
Allow me to engage in my chosen activities while in GNP	1.03	1.78	1.71	1.47	3.28	3.90
Help me decide where to stop along the Going to the Sun Road	0.65	1.94	1.21	2.95	2.95	3.81
Allow me to have the type of experience I desire at GNP	0.87	1.82	1.67	1.44	2.87	3.92
Cause me to be with new and different people	1.32	1.79	1.43	1.29	2.79	3.67
Allow me more time to interact with my family	0.69	1.97	1.54	1.50	2.74	4.15
Make me more aware of time while visiting GNP	0.80	1.88	0.90	1.67	2.15	3.93
Require me to plan my day	1.22	1.74	0.68	1.64	1.52	3.81

*Composite means were computed by multiplying the belief and evaluations scores of each participant then taking an average of the composite score of all participants (n=410)

Subjective Norms

Participants were also asked about the influence of others (important referents) on their decisions about riding the shuttle at Glacier National Park. Participants were asked

how much each of the important referents would think they should ride the shuttle while at GNP and how much they cared about what each referent thought they should do during their visit (on a seven-point scale with 1 being not at all and 7 being very much for each question).

The measure of the subjective norm for each referent is comprised of the extent to which the individual believes that referent would think they should ride the shuttle at GNP and their motivation to comply with the wishes of each referent. In other words, a person who believes that an important referent would think they should ride the shuttle and is motivated to comply with the wishes of that referent would have a stronger subjective norm regarding that referent than someone who believed the referent wouldn't want them to ride or that didn't care what the referent thought. The equation for calculating the direction and strength of the subjective norm for each referent is:

$$sn_i = B_i M_i$$

where B is the individual's perceived belief of the referent and M is the individual's motivation to comply with the beliefs of that referent. Thus the possible range for individual subjective norm scores is one to 49.

Participant's subjective norms for each of the referents were widely distributed. Participants' mean subjective norms were moderate toward all referents with the strongest subjective norms associated with respect to park managers (25.67) and lowest with respect to friends (19.19) (Table 12).

Table 12: Participant Scores on Subjective Norm Items

Referent	Perceived Beliefs of Others		Motivation to Comply		Composite	
	Mean	*s.d.*	*Mean*	*s.d*	*Mean*	*s.d.*
Park managers	6.21	1.52	4.08	2.45	26.33	16.22
Family	4.63	2.30	4.61	2.21	22.83	16.28
Personal travel group	4.43	2.30	4.57	2.26	22.10	16.83
Friends	4.53	2.16	4.00	2.16	20.05	15.39

*Composite means were computed by multiplying the perceived beliefs of others and motivation to comply scores of each participant then taking an average of the composite score of all participants (n=415)

Perceived Behavioral Control

Participants were also asked about a series of factors that might make riding the shuttle at Glacier National Park easier or more difficult. For each factor participants were asked about their expectations for each outcome (on a seven-point scale with -3 being strongly disagree and +3 being strongly agree) and how much easier/more difficult riding the shuttle would be if that factor existed (on a seven-point scale with -3 much more difficult and +3 being much easier).

The measure for the perceived behavioral control attributed to each of the expectations is comprised of the expectation that the factor will exist and the extent to which the factor would make riding the shuttle easier/more difficult. In other words, a person who believes a specific factor will exist and also believes the factor will make riding the shuttle easier will have a positive perceived behavioral control. Similarly, a person who believes a specific factor will not exist and that the existence of the factor would make riding the shuttle more difficult will also have positive perceived behavioral control. (i.e. they believe that a factor that would make riding the shuttle more difficult

won't exist thus riding the shuttle would be easier than if the factor had existed). If, however, a person believes that a factor that would make riding the shuttle more difficult will exist, their perceived behavioral control will be negative. The equation for calculating the direction and strength of the individual perceived behavioral control is:

$$pbc_i = S_i P_i$$

where S is the individual's belief that a control factor will exist (Control Belief Strength) and P is the individual's evaluation of how much easier/more difficult that factor would make riding the shuttle (Control Belief Power).

As with attitudes, perceived behavioral control was coded on a scale of negative three to positive three with a true mid-point existing at zero in an effort to aid in interpretation. A participant who strongly agreed that a control factor would exist (giving it a score of +3) who also thought that factor would make riding the shuttle much easier (giving that question a score of +3) would have a high level of perceived behavioral control (composite score +9) since a factor that would make riding the shuttle easier would exist. Similarly, participants who strongly disagreed that they expected a control item to exist (control belief strength) would assign to that item a score of -3. If that person also rated that control item as something that would make riding the shuttle more difficult (assigning it a score of -3) then that person would have a high level of perceived behavioral control (composite score of +9) because a factor that would make riding the shuttle difficult would not exist.

In contrast, a participant who stated that a factor would exist (+3) but that the factor would make riding the shuttle much more difficult (-3) would have little perceived behavioral control (composite score -9). Likewise, a participant who stated that a factor

would not exist (-3) and that the factor, had it been present, would have made riding the shuttle much easier (+3) would also have little perceived behavioral control (-9) because the factor that would make riding the shuttle easier would not exist.

If a participant, however, neither agreed nor disagreed that the factor would be present or thought the factor would neither make riding the shuttle more difficult nor easier, then they would be neutral toward that factor (i.e. it would neither facilitate nor inhibit their control over riding the shuttle). Thus the possible range for individual perceived behavioral control scores is negative nine to positive nine.

Visitors' perceived behavioral control composites were widely varied and generally weakly positive. The control factors that had the highest perceived behavioral control composites were: "I will understand how to utilize the shuttle at GNP" (3.90), "I will have ample time to do the things I want to do at GNP during the visit" (3.47), and "The shuttle will stop at the location I want to visit along the Going to the Sun Road" (3.42) (Table 13).

Table 13: Participant Scores on Perceived Behavioral Control Items

Statement	Control Belief Strength		Control Belief Power		Composite	
	Mean	*s.d.*	*Mean*	*s.d*	*Mean*	*s.d.*
I will understand how to utilize the shuttle at GNP	1.67	1.42	1.68	1.42	3.88	3.84
The shuttle will stop at the location I want to visit along the GTSR	1.39	1.64	1.45	1.68	3.31	4.14
I will have ample time to do the things I want to do at GNP during this visit	1.35	1.65	1.42	1.60	3.28	3.97
I will be able to get on the bus I want	1.20	1.52	1.38	1.56	2.73	3.77
I will carry a lot of gear when I travel on GTSR	0.07	1.93	0.07	1.89	1.51	4.04

* n=422

Behavioral Intentions

Participants were also asked to indicate to what extent they intended to ride the shuttle at Glacier National Park. A total of three questions were used, each using a seven-point scale with -3 being representing a strong intention not to ride the shuttle and +3 being a strong intention to ride the shuttle. The mean intention score was 0.14 with a standard deviation of 2.61. The majority of participant responses to the intention questions were at the far ends of the spectrum (Table 14).

Table 14: Participant Scores on Intention Items

Question	N	Mean	s.d
I will make an effort to ride the shuttle at GNP during this visit	466	0.29	2.64
I intend to ride the shuttle at GNP during this visit	455	0.07	2.72
How likely is it you will ride the shuttle at GNP during this visit?	481	-0.03	2.74
Mean Intention Score		**0.14**	**2.61**

Shuttle Behavior

Just over half of survey respondents (50.3 percent) reported using the shuttle system during their visit to Glacier National Park. Of those visitors who reported riding the shuttle, 49 percent reported riding the shuttle every time they traveled the road (Table 15).

Table 15: Frequency of Shuttle Use among Shuttle Riders

Frequency	Percent
Every time I traveled the road	49.4
Less than half the time I traveled the road	16.1
Most of the time I traveled the road	15.5
At least half the time I traveled the road	19.0

*This table only includes those respondents who reported riding the shuttle during their visit. (n=349)

For What Purposes did Visitors Ride the Shuttle?

Survey participants who chose to use the shuttle at GNP were asked to indicate the purposes for which they used the shuttle system. As shown in Table 16, the three most popular reasons for using the shuttle cited by visitors were to view scenery (67.4 percent), to access a trailhead for hiking (60.7 percent), and to tour the road (58.4 percent).

Table 16: Reasons for Riding the Shuttle

Purpose	Percent
View scenery	67.4
Access a trail head for hiking	60.7
Tour the road	58.4
Get to a destination along the road	47.8
Access visitor centers	40.4
Visit a developed area within the park	26.4
Go on a picnic	7.9
Backcountry camping	6.7
Attend interpretive programs	5.6
Other	1.7

* Participants were asked to "check all that apply". (n=184)

CHAPTER 6: TESTING THE MODEL

This chapter will focus on testing the research hypotheses. The foundation upon which the research hypotheses are built is the Ajzen's (2005a) theory of planned behavior. The chapter will begin with a series of reliability analyses of the variables to be used in the model. Then the research hypotheses will be tested using ordinary least squares linear regression and logit analysis.

Reliability Analysis

Many of the variables to be used in testing the research hypotheses are constructed using composite scores from a series of Likert-type scale questions. For example, to test the first five hypotheses, comprehensive composite scores were first calculated for each of the dimensions of the theory of planned behavior. The comprehensive composite score for attitudes, subjective norms, and perceived behavioral control were calculated by averaging all of the individual composite scores (described in chapter 4) for each dimension. The composite score for behavioral intentions was calculated by averaging participant responses to the three intentions questions. To ensure the appropriateness of these measures, Chronbach's Coefficient Alpha was calculated as a measure of internal consistency.

Intention

Intention was measured using three separate questions within the survey instrument. Visitors were asked to indicate the degree to which they intended to ride the shuttle, make an effort to ride the shuttle, and the likelihood that they would ride the

shuttle (each on a seven-point Likert type scale). Chronbach's Alpha for the scale was 0.97, indicating that the scale for intentions was highly reliable (Table 17).

Table 17: Chronbach's Alpha for Intentions Scale

Scale Item	α if Item Removed
How likely is it you will ride the shuttle at GNP during this visit?	0.97
I will make an effort to ride the shuttle at GNP during this visit	0.95
I intend to ride the shuttle at GNP during this visit	0.93

Attitudes

Attitudes toward shuttle use were measured using two scales the first measured visitors' beliefs about the likelihood of potential outcomes of riding the shuttles and the second measured their evaluations of each of those potential outcomes. Attitude is measured as a composite score calculated by summing the products the corresponding scores from the belief and evaluation scales (as described in Chapter 4). Both scales were shown to be internally consistent with the scale on beliefs about outcomes having a Chronbach's α of 0.94 and the scale on evaluations of outcomes having a Chronbach's α of 0.97 (Table 18).

Table 18: Chronbach's Alpha for Attitude Scales

	α	
Item	**Beliefs**	**Evaluations**
Cause me to be with new and different people	0.942	0.946
Allow me to have the type of experience I desire at GNP	0.936	0.942
Allow me to engage in my chosen activities while at GNP	0.935	0.942
Allow me to go to the areas I want within GNP	0.936	0.942
Shorten traffic delays in the park due to construction	0.938	0.941
Prevent me from having to deal with undesirable traffic conditions at GNP	0.936	0.944
Allow me to see the sights at GNP	0.936	0.941
Allow me more time to interact with my family	0.939	0.944
Require me to plan my day	0.944	0.945
Alleviate parking issues within the park	0.937	0.943
Be a safe way to travel the Going to the Sun Road	0.935	0.941
Reduce my stress while visiting GNP	0.935	0.940
Help me decide where to stop along the Going to the Sun Road	0.937	0.942
Benefit the environment at GNP	0.936	0.943
Make me more aware of time while visiting GNP	0.939	0.945
Be a comfortable way to travel through the park	0.936	0.941
Relieve me of the responsibility of driving while at GNP	0.936	0.942

Subjective Norms

Subjective norms were measured using two scales the first measured visitors' perceptions of the beliefs of important referents with respect to the participant's use of a shuttle at GNP and the second measured their motivation to comply with the beliefs of those important referents. Subjective norms are measured as a composite score calculated by summing the products the corresponding scores from the belief and motivation to comply scales. Both scales were shown to be internally consistent with the scale on perceptions of the beliefs of others having a Chronbach's α of 0.86 and the scale on motivation to comply having a Chronbach's α of 0.88 (Table 19).

Table 19: Chronbach's Alpha for Subjective Norm Scales

	α	
Item	**Beliefs about Others**	**Motivation to Comply**
The group you are traveling with	0.787	0.856
Your Family	0.770	0.829
Your Friends	0.789	0.827
Park Managers	0.939	0.888

Perceived Behavioral Control

Perceived behavioral control was measured using two scales the first measured control belief strength and the second measured control belief power. Perceived behavioral control is measured as a composite score calculated by summing the products the corresponding scores from the control belief strength and control belief power scales. Both scales were shown to be internally consistent with the scale on control belief strength having a Chronbach's α of 0.76 and the scale on control belief power having a Chronbach's α of 0.87 (Table 20).

Table 20: Chronbach's Alpha for Perceived Behavioral Control Scale

	α	
Item	**Beliefs**	**Evaluations**
The shuttle will stop at the locations I want to visit along the GTSR	0.669	0.804
I will be able to get on the bus I want	0.669	0.814
I will understand how to utilize the shuttle at GNP	0.678	0.824
I will have ample time to do the things I want to do at GNP during this visit	0.666	0.811
I will carry a lot of gear when I travel on GTSR	0.869	0.919

Recreation Experience Preference Factors

The relationship between visitors' intentions to ride the shuttle and their recreation experience preferences will be measured using the REP factors discussed in Chapter Four. The factors of solitude and nature appreciation were both acceptable with respect to internal consistency (α=0.770 and α=0.759 respectively). The secure/social factor was questionable with respect with respect to internal consistency (α=0.57), however, the removal on any single item did not improve the consistency of the factor. The final factor of personal control was comprised of only one item (Table 21).

Table 21: Chronbach's Alpha for REP Factors

Factor/Item	α	α if item removed
Solitude	0.770	
To experience solitude		0.680
To be away from crowds of people		0.723
To feel my independence		0.765
To be in a place that is quiet		0.688
Nature Appreciation	0.759	
To be close to nature		0.699
To photograph wildlife		0.712
To see wildlife		0.668
To see scenic beauty		0.741
To learn about things at GNP		0.753
Secure Social	0.570	
To be near considerate people		0.491
To do something with your family		0.555
To be where things are fairly safe		0.463
To think about your personal values		0.482
Personal Control*	--	
To be in control of things that happen		--

* Chronbach's Alpha cannot be run on only one item

Testing the Hypotheses

This section will focus on testing the research hypotheses. The foundation upon which the research hypotheses were built is Ajzen's (2005a) theory of planned behavior. The first six research hypotheses will be tested using linear regression while the final hypothesis will be tested using logistical regression.

To test the first five hypotheses, comprehensive composite scores were first calculated for each of the dimensions of the theory of planned behavior. The comprehensive composite score for attitudes, subjective norms, and perceived behavioral control were calculated by averaging all of the individual composite scores (described in chapter 4) for each dimension. The composite score for behavioral intentions was calculated by averaging participant responses to the intention questions.

Testing the Theory of Planned Behavior

Ordinary least squares linear regression was used to test the variance explained by the theory of planned behavior using the composite scores for each dimension as presented by Ajzen (2005). The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 A_i + \beta_2 SN_i + \beta_3 PBC_i + e_i$$

Where I is intention to ride the shuttle, A is the attitude composite score, SN is the subjective norms composite score, PBC is the perceived behavioral control composite score, and e is error term.

Linear regression revealed a significant relationship between each of the predictors and intention to ride the shuttle. ($n=412$, $F\text{-}76.326$, $P<0.05$). The regression equation explained 36 percent of the variability in behavioral intentions ($R^2 = .359$).

Results indicated that each of the constructs of the theory of planned behavior was a significant predictor of behavioral intentions. More specifically, people with more strongly positive attitudes toward riding the shuttle, those with stronger subjective norms toward shuttle use, and those with more perceived control over riding the shuttle had stronger intentions to ride the shuttle than those whose attitudes, subjected norms, and perceived control was weaker or less positive (Table 22).

Table 22: Linear Regression on Theory of Planned Behavior

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-2.354	0.208		-11.327	<0.01
ATT Comp	0.319	0.046	0.341	6.949	<0.01
SN Comp	0.050	0.009	0.270	5.588	<0.01
PBC	0.095	0.040	0.110	2.388	0.017

To determine if the amount of variance explained by the theory of planned behavior model could be improved, ordinary least squares linear regression was then conducted adding the average scores for each of the constructs that made up the composites (i.e. attitudes, subjective norms, and perceived behavioral control) as well as the composites themselves (e.g. beliefs about outcomes and evaluations of outcomes in addition to the attitude composite score). The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 A_i + \beta_2 AB_i + \beta_3 AE_i + \beta_4 SN_i + \beta_5 SNB_i + \beta_6 SNM_i + \beta_7 PBC_i + \beta_8 CBS_i + \beta_9 CBP_i + e_i$$

Where A, SN, PBC, and are as described in the previous model and AB is beliefs about outcomes, AE is evaluations of outcomes, SNB is the beliefs about the desires of others, SNM is the motivation to comply with the beliefs of others, CBS is control belief strength, and CBP is control belief power.

Linear regression revealed a significant relationship between the predictor variables and intention (n=412, F=48.659, P<0.05). The regression equation explained 36 percent of the variability in behavioral intentions (R^2 = .359). Only the attitude composite and the subjective norms belief variables were significant predictors of intention (P<0.05) within the model. Each of the significant variables were positive predictors indicating that those with strongly positive attitudes and beliefs that important referents would want them to ride the shuttle were more likely to intend to ride the shuttle than those with more negative attitudes and weaker subjective norms beliefs (Table 23).

Table 23: Linear Regression on Expanded Theory of Planned Behavior

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-4.089	0.594		-6.883	<0.001
AB	0.268	0.152	0.128	1.769	0.078
AE	-0.220	0.155	-0.086	-1.413	0.158
Attitude Composite	0.120	0.055	0.128	2.175	0.030
SNB	0.829	0.129	0.527	6.452	<0.001
SNM	-0.200	0.134	-0.143	-1.494	0.136
SN Composite	0.015	0.025	0.083	0.610	0.542
CBS	0.053	0.115	0.023	0.459	0.646
CBP	0.093	0.096	0.046	0.965	0.335
PBC Composite	0.035	0.043	0.040	0.800	0.424

Expanding the Theory of Planned Behavior to Include Recreation Experience Preference and Activity Choice

The overarching goal of this study is to determine what effects visitors higher order goals of recreation experience preferences and engagement in chosen recreational activities have on visitors decisions (measured as intention) of whether or not to rider the

a shuttle in GNP. Specifically, this study seeks to determine if the higher order goals mentioned above are predictive of visitors' intentions above and beyond what is explained by the theory of planned behavior.

To test this proposed expansion of the theory of planned behavior model (Figure 3), ordinary least squared linear regression was conducted using the full theory of planned behavior model above and adding variables for recreation experience preference (the REP factors discussed in Chapter 4) and activity choice (using the activity types derived from cluster analysis in Chapter 4). Linear regression revealed a significant relationship between the predictor variables and intention ($n=412$, $F=28.299$, $P<0.05$). The model increased the amount of variance explained by the model to 53 ($R^2=0.534$).

As in the previous model, the attitude composite and subjective norms belief variables were both significant predictors of intention to ride the shuttle. Additionally, the variable for solitude was also a significant positive predictor of attitudes ($P<0.05$), with those placing higher importance on experiences of solitude having stronger intentions to ride the shuttle. None of the other variables for recreation experience preference were significant.

Variables for activity choice were created using indicator coding based upon the activity choice cluster membership of participants (i.e. Uncommitted Recreationists, Diverse Recreationists, Immersion Recreationists, and Front-Country Recreationists). Since all four groups cannot be entered into the regression equation, the Immersion Recreationists group was excluded and thus became the comparison group. Cluster membership was not a significant predictor of intention for any of the activity type groups. Membership in the Diverse Recreationist group, however, was a marginal

predictor (P<0.10) indicating that visitors belonging to that group had stronger intentions to ride the shuttle than those of other groups (Table 24).

Table 24: Theory of Planned Behavior with REP and Activity

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-4.707	0.873		-5.390	<0.001
AB	0.242	0.154	0.116	1.577	0.116
AE	-0.162	0.157	-0.064	-1.031	0.303
Attitude Composite	0.114	0.056	0.122	2.057	0.030
SNB	0.825	0.129	0.524	6.381	<0.001
SNM	-0.193	0.135	-0.138	-1.434	0.152
SN Composite	0.015	0.025	0.079	0.583	0.560
CBS	0.057	0.115	0.025	0.495	0.621
CBP	0.080	0.097	0.039	0.821	0.412
PBC Composite	0.037	0.044	0.043	0.855	0.393
Solitude	0.324	0.125	0.101	2.592	0.010
Nature Appreciation	-0.069	0.158	-0.017	-0.433	0.665
Secure Social	-0.102	0.134	-0.030	-0.761	0.447
Personal Control	-0.003	0.084	-0.002	-0.041	0.967
Uncommitted Rec.	0.066	0.228	0.012	0.290	0.772
Diverse Rec.	0.427	0.250	0.069	1.707	0.089
Front-country Rec.	-0.063	0.282	-0.009	-0.222	0.824

Expanding the Model to Include Trip and Group Characteristics

As discussed in the review of literature, a study conducted by White (2007) indicated that group/trip characteristics influence visitors' perspectives and behaviors toward shuttle use at Yosemite National Park. To better understand how group/trip characteristics might improve the prediction of intentions to ride the shuttle, linear regression was run adding variables for length of stay, group size, and presence of small children in travel group to the proposed model (which includes the Ajzen's (2005) theory of planned behavior model an REP and activity variables).

The inclusion of length of stay, group size and presence of small children improved the amount of variance explained by the model to 58 percent (R^2=0.578, F=22.60, P<0.05). Significant predictors in the model include subjective norms beliefs, solitude, length of stay, and group size. The Attitude composite in this model is a marginal predictor (0.05<P<0.10). As in the previous model, both subjective norms beliefs and solitude were positive predictors. In addition, length of stay was also a positive predictor with larger number of days in park predicting higher intention scores. Group size, however, was a negative predictor of intentions indicating that larger travel groups had weaker intentions toward shuttle use (Table 25).

Table 25: Expanded TPB Model with Group and Trip Characteristics

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-4.385	1.019		-4.303	<0.001
AB	0.191	0.164	0.092	1.166	0.245
AE	-0.166	0.170	-0.064	-0.981	0.327
Attitude Composite	0.103	0.063	0.108	1.632	0.104
SNB	0.857	0.136	0.554	6.319	<0.001
SNM	-0.184	0.143	-0.131	-1.291	0.197
SN Composite	0.017	0.027	0.092	0.645	0.520
CBS	-0.011	0.123	-0.005	-0.088	0.930
CBP	0.035	0.101	0.018	0.349	0.727
PBC Composite	0.048	0.047	0.054	1.018	0.309
Solitude	0.294	0.136	0.092	2.162	0.031
Nature Appreciation	-0.191	0.176	-0.047	-1.083	0.279
Secure Social	-0.005	0.144	-0.002	-0.036	0.971
Personal Control	0.018	0.094	0.008	0.188	0.851
Uncommitted Rec.	-0.097	0.251	-0.017	-0.387	0.699
Diverse Rec.	0.397	0.278	0.063	1.427	0.155
Front-country Rec.	-0.291	0.306	-0.042	-0.949	0.343
Days in Park	0.084	0.038	0.085	2.195	0.029
Group Size	-0.110	0.054	-0.094	-2.044	0.042
Small Children	0.053	0.320	0.007	0.165	0.869

Testing the Individual Constructs

After evaluating the effectiveness of the full model, ordinary least squares linear regression was also run to determine the effectiveness of individual constructs in predicting behavioral intentions.

Attitudes

To test the variance explained by attitudes, regression was run using the average score from the belief scale, the average score from the evaluation scale, and the composite score (as discussed in Chapter 4). The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 AB_i + \beta_2 AE_i + \beta_3 AComp + e_i$$

Where I is intention to ride the shuttle, AB is the average belief score (for all possible outcomes in the scale), AE is the average evaluation score (for all possible outcomes in the scale), ACompX is the composite score, and E is error.

Linear regression revealed a significant relationship between the predictors and behavioral intentions (n=404, F=65.6, P <0.05). The regression equation explained 33 percent of the variance in behavioral intentions (R^2=.325).

The average belief score (AB) and the attitude composite score were both statistically significant predictors of intention. Outcome evaluation scores, however, were not statistically significant. Of the three dimensions, the attitude composite was the strongest predictor of intentions (Beta = 0.288) followed by the average belief score (Beta=0.283) (Table 26).

Table 26: Significance of Attitude Components in Predicting Intentions to Ride

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-1.0702	0.223		-7.629	.000
Belief	0.594	0.171	0.283	3.474	0.001
Evaluation	0.104	0.170	0.041	0.614	0.540
Attitude Composite	0.270	0.061	0.288	4.436	0.000

Subjective Norms

To test the variance explained by subjective norms, ordinary least squares linear regression was run using the average score from the belief scale, the average score from the motivation to comply scale, and the composite score (as discussed in Chapter 4). The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 SNB_i + \beta_2 SNM_i + \beta_3 SNComp_i + e_i$$

Where I is intention to ride the shuttle, SNB is the average belief score (for all referents), SNM is the average motivation to comply score (for all referents), SNComp is the composite score, and E is error.

Linear regression revealed a significant relationship between the predictors and behavioral intentions (n=404, F=130.610, P <0.05). The regression equation explained 49 percent of the variance in behavioral intentions (R^2= 0.490).

All three subjective norm measures were statistically significant predictors of behavior. Of the three dimensions, the SNB was the strongest predictor of intentions (Beta = 0.603) (Table 27).

Table 27: Significance of Subjective Norms Components in Predicting Intention to Ride

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-4.126	0.594		-6.949	.000
SN Belief	0.948	0.124	0.603	7.663	.000
SN Motivation	-0.308	0.133	-0.220	-2.323	0.021
SN Composite	0.043	0.025	0.229	1.712	0.088

Perceived Behavioral Control

To test the variance explained by perceived behavioral control, ordinary least squares linear regression was run using the average score for control belief strength, the average score from the control belief power, and the composite score (as discussed in Chapter 4). The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 CBS_i + \beta_2 CBS_i + \beta_3 PBCComp_i + e_i$$

Where I is intention to ride the shuttle, CBS is the average control belief strength score, CBP is the average control belief power score, PCB is the composite score, and E is error.

Linear regression revealed a significant relationship between the predictors and behavioral intentions (n=404, F=37.35, P <0.05). The regression equation explained 22 percent of the variance in behavioral intentions (R^2=.215).

Each subjective norm measures was a statistically significant predictors of behavior. Of the three dimensions, the CBS was the strongest positive predictor of intentions (Beta = 0.210) (Table 28).

Table 28: Significance of Perceived Behavioral Control Components in Predicting Intentions to Ride

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-1.079	0.173		-6.244	.000
CBS	0.474	0.139	0.210	3.395	0.001
CBP	0.372	0.119	0.183	3.128	0.002
PBC Composite	0.124	0.052	0.144	2.381	0.018

Recreation Experience Preference

Ordinary least squares linear regression was also used to test the second research hypothesis. This hypothesis was tested using the mean score for each of the REP factors. The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 SOL_i + \beta_2 NA_i + \beta_3 SS_i + \beta_3 \, PCont_i + e_i$$

Where I is intention to ride the shuttle, SOL is solitude, NA is nature appreciation, SS is secure solitude, PCont is Personal Control, and E is error.

Linear regression revealed a significant relationship between the predictors and behavioral intentions (n=404, F=4.834, P <0.05). The regression equation explained five percent of the variance in behavioral intentions (R^2=0.045).

Solitude and personal control were both statistically significant predictors of intention. Nature appreciation and secure-social, however, were not statistically significant. Of the four dimensions, the personal control was the strongest predictor of intentions (Beta = -0.138) followed by the solitude (Beta=0.128) (Table 29).

Table 29: Significance of Recreation Experience Preferences in Predicting Intention to Ride

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-1.826	0.926		-1.972	0.049
Solitude	0.410	0.172	0.128	2.386	0.017
Nature Appreciation	0.229	0.215	0.057	1.062	0.289
Secure-social	0.205	0.179	0.061	1.147	0.252
Personal Control	-0.316	0.114	-0.138	-2.782	0.006

Activity Choice

To test the variance explained by activity choice, ordinary least squares linear regression was run using cluster membership for activity groups. Variables for activity choice were created using indicator coding based upon the activity choice cluster membership of participants (i.e. Uncommitted Recreationists, Diverse Recreationists, Immersion Recreationists, and Front-Country Recreationists). Since all four groups cannot be entered into the regression equation simultaneously, the Immersion Recreationists group was excluded and thus became the comparison group.. The regression equations for this test is:

$$I_i = \beta_0 + \beta_1 UR_i + \beta_2 DR_i + \beta_3 FCR_i + e_i$$

Where I is intention to ride the shuttle, UR represents membership in the uncommitted recreationists group, DR represents membership in the diverse recreationists group, FCR represents membership in the front-country recreationists group, and e is error. The regression model failed to reach statistical significance ($F=1.827$, $P>0.10$).

Group Size

To test the variance explained by group size, ordinary least squares linear regression was run on the number of people in travel group as reported by participants. The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 GRP_i + e_i$$

Where I is intention to ride the shuttle, GRP is group size, and e is error.

Linear regression revealed a significant relationship between group size and behavioral intentions (n=404, F=15.912, P <0.05). The regression equation explained four percent of the variance in behavioral intentions (R^2=.037). Group size had a negative effect on intentions to ride the shuttle (Beta = -0.193) (Table 30).

Table 30: Significance of Group Size in Predicting Intention to Ride

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	1.031	0.220		4.681	0.000
Group Size	-0.205	0.051	-0.193	-3.989	0.000

Presence of Small Children

To test the variance explained by traveling with small children, ordinary least squares linear regression was run whether or not respondents reported having small children (10 years old and younger) in their personal travel group. The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 KID_i + e_i$$

Where I is intention to ride the shuttle, KID is the variable for the presence of small children in travel group, and e is error.

Linear regression revealed a significant relationship between traveling with small children and behavioral intentions (n=404, F=9.610, P <0.05). The regression equation explained three percent of the variance in behavioral intentions (R^2=0.028). Traveling with small children had a negative effect on intentions to ride the shuttle (Beta = -0.167) (Table 31).

Table 31: Significance of Presence of Small Children in Predicting Intention to Ride

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	1.634	0.472		3.463	0.001
KID	-1.212	0.391	-0.167	-3.100	0.002

Length of Stay

To test the variance explained by visitors' length of stay, ordinary least squares linear regression was run with the number of days visitors reported spending in the park. The regression equation for this test is:

$$I_i = \beta_0 + \beta_1 DAY_i + e_i$$

Where I is intention to ride the shuttle, DAY is number of days spent in the park, and e is error.

Linear regression revealed a significant relationship between length of stay and behavioral intentions (n=404, F=10.096, P <0.05). The regression equation explained three percent of the variance in behavioral intentions (R^2=0.025). Length of stay had a positive effect on intentions to ride the shuttle (Beta = 0.157) (Table 32).

Table 32: Significance of Length of Stay in Predicting Intention to Ride

	Unstandardized Coefficients		Standardized Coefficients		
	B	**St. Error**	**Beta**	**t**	**Sig.**
Constant	-0.214	0.203		-1.055	0.292
DAY	0.133	0.042	0.157	3.177	0.002

Evaluating the Relationship between REP and Attitudes

Since only the recreation experience preference for solitude was shown to predict intentions above that which was predicted by the theory of planned behavior, it may be valuable to examine if those constructs were also functioning within the model. To understand how recreation experience preference may be influencing behavior both within and in addition to the constructs of the theory of planned behavior, visitors' scores on the REP factors were correlated with the overall attitude composite scores as well as the composite scores for each of the attitude items. The REP factors of Nature Appreciation, Secure Social, and Personal Control (the three factors that did not achieve statistical significance as predictors of intention in the full model) were each significantly correlated with attitude composite scores. Nature Appreciation and Secure Social experiences were positively correlated were positively correlated with general attitudes toward shuttle use, indicating that visitors who placed importance on these experiences had positive attitudes toward shuttle use. Personal Control was negatively correlated with general attitudes toward shuttle use, indicating that visitors who place importance on having experiences of personal control had less positive attitudes toward shuttle use. Solitude, the only REP factor to gain statistical significance as a predictor of intentions to ride the shuttle in the full model, did not have a significant correlation with the attitude

composite measure. Solitude was, however, positively correlated with some of the individual attitude components, specifically: reducing stress, benefiting the environment, being more aware of time, and relief from the responsibility of driving. (Table 33).

Table 33: Correlations between Attitudes and REP

	Solitude	Nature Appreciation	Secure Social	Personal Control
Attitude Composite	0.080	0.156**	0.167**	-0.164**
Benefit the environment at GNP	0.160**	0.207**	0.121*	-0.150**
Alleviate parking issues within the park	0.086	0.131**	0.082	-0.096
Be a safe way to travel the Going to the Sun Road	0.062	0.112*	0.145**	-0.191**
Relieve me of the responsibility of driving in GNP	0.099*	0.080	0.184**	-0.098*
Allow me to see the sights at GNP	-0.005	0.076	0.110*	-0.148**
Shorten traffic delays in the park due to construction	0.058	0.060	0.042	-0.133**
Prevent me from having to deal with undesirable traffic conditions at GNP	0.053	0.098*	0.079	-0.133**
Be a comfortable way to travel through the park	0.076	0.150**	0.175**	-0.112*
Reduce my stress while visiting GNP	0.116*	0.103*	0.095	-0.120*
Allow me to go to the areas I want in GNP	0.011	0.117*	0.039	-0.186**
Allow me to engage in my chosen activities while in GNP	0.003	0.099*	0.055	-0.151**
Help me decide where to stop along the Going to the Sun Road	0.032	0.154**	0.152**	-0.072
Allow me to have the type of experience I desire at GNP	-0.001	0.058	0.103*	-0.099*
Cause me to be with new and different people	0.042	0.153**	0.072	-0.171**
Allow me more time to interact with my family	0.000	0.029	0.151**	-0.088
Make me more aware of time while visiting GNP	0.099*	0.183**	0.215**	0.001
Require me to plan my day	0.055	0.015	0.123*	-0.054

* Significant at P<0.05
* Significant at P<0.01

Evaluating the Relationship between Intentions and Behavior

The final piece of the original Ajzen (2005) model of the theory of planned behavior is the relationship between intentions and behavior (which may be modified by perceived behavioral control to the extent that PBC is reflective of actual control over behavior). Logistical regression was used to determine the ability of behavioral intentions (I) and perceived behavioral control (PCBComp) to predict shuttle-use behavior. Results of logistic regression showed that behavioral intentions were significant in prediction of shuttle ridership (Wald=86.86, $P<0.05$) while perceived behavioral control was not (Wald=1.62, $P>0.10$).

Removing perceived behavioral control results in a slight increase of the Wald statistic for intention (Wald = 96.47, $P<0.05$). The Nagelkerke R^2 (an approximation of the R^2 in ordinary least squares linear regression used for interpreting logistical regression, $R^2 = 0.764$) indicates that the model containing only intentions is a good fit to the data.

CHAPTER 7: COMPARING SHUTTLE RIDERS TO NON-RIDERS

Participants who rode the shuttle were compared with those who did not ride on a number of factors to determine if any difference existed between the two groups with respect to the types of recreational experiences they desire, the types of activities they plan to engage in, the constructs of the theory of planned behavior, as well as visitor, group, and trip characteristics. While visitors were the same in the majority of ways (e.g. physical ability, history of alternative transportation use at home, or employment status), several differences between riders and non-riders did emerge.

Recreation Experience Preference

Visitors were asked to indicate the importance of achieving different types of recreation experiences during their visit to Glacier National Park (using a five-point scale with one being not important and five being extremely important). While riders and non-riders were similar with respect to most desired experiences, riders rated seeing scenic beauty ($t=2.11$, $P<0.05$) and being in a place that was quiet ($t=2.16$, $P<0.05$) as significantly more important than non-riders. Additionally, non-riders rated being in control of things that happen as significantly more important than riders ($t=-2.57$, $P<0.05$, see Table 34).

Table 34: Difference between Riders and Non-riders on Recreation Experience Preference Items

	Rider		Non-riders	
Experience	**N**	**Mean**	**N**	**Mean**
To see scenic beauty	170	4.74	175	4.61*
To be close to nature	170	4.22	173	4.19
To see wildlife	169	4.17	174	4.13
To do something with your family	171	4.09	172	4.12
To learn about things at Glacier National Park	173	3.88	177	3.77
To be near considerate people	174	3.85	173	3.83
To be in a place that is quiet	174	3.76	173	3.54*
To be away from crowds of people	172	3.70	172	3.62
To photograph wildlife	169	3.63	173	3.75
To be where things are fairly safe	172	3.49	174	3.64
To experience solitude	170	3.38	169	3.31
To feel my independence	172	3.21	170	3.22
To think about your personal values	171	3.07	173	3.01
To be in control of things that happen	166	2.98	167	3.30*

* significant difference at P<0.05

Activities

A larger proportion of shuttle riders than non-riders planned to engage in walking/running (χ^2=24.15, P<0.05), hiking (χ^2=11.55, P<0.05), picnicking (χ^2=3.18, P<0.10), camping in vehicle (χ^2=8.56, P<0.05), ranger led programs (χ^2=5.47, P<0.05), backpacking (χ^2=3.12, P<0.10), and fishing (χ^2=3.13, P<0.10). A larger proportion of non-riders than riders, however, planned to engage in auto touring (χ^2=24.16, P<0.05, see Table 35).

There were no significant differences between activity type groups with respect to shuttle ridership (χ^2=87, P=0.65). Similarly, there were no significant differences between activity type groups with respect to intention to ride the shuttle (F=.914, P=0.40).

Table 35: Difference in Activities among Riders and Non-riders

Activity		Riders	Non-Riders	χ^2	Significance
Driving: Auto touring	Percent	66.3	87.9	24.16	<0.001
	Count	122	160		
Walking/running	Percent	67.4	53.3	7.60	0.006
	Count	124	97		
Hiking	Percent	69.0	51.6	11.55	0.001
	Count	127	94		
Picnicking	Percent	39.7	30.8	3.18	0.08
	Count	73	56		
Camping: in vehicle	Percent	26.6	14.3	8.56	0.003
	Count	49	26		
Ranger led program	Percent	21.2	12.1	5.47	0.019
	Count	39	22		
Backpacking	Percent	12.0	6.6	3.12	0.08
	Count	22	12		
Fishing	Percent	9.8	4.9	3.13	0.08
	Count	18	9		

Group Size

Visitors were asked to indicate the size of their personal travel group. Significant differences were found between riders and non-riders with respect to group size. Riders were in generally smaller groups (average 3 people per group) than non-riders (average 4 people per group, t=-1.92, P=0.05).

Number of Small Children

No differences existed between riders and non-riders regarding the number of children less than six years of age (t=-1.56, P>0.1) or between the ages of 10 and 18 years of age (t=0.19, P>0.1) in their personal travel group. Significant differences did exist between riders and non-riders with respect to the number of children between six and ten years old with riders traveling with fewer children between the ages of six and ten than non-riders (t=-1.84, P<0.1).

Theory of Planned Behavior Items

Riders and non-riders were also compared with respect to the individual composite scores of the theory of planned behavior items. Significant differences existed between riders and non-riders on almost all of the theory of planned behavior composite scores.

Attitude Composites

Significant differences existed between riders and non-riders for each of the attitude composites (t-tests, $P<0.05$). The only composite score that did not contain a significant difference was "Cause me to be with new and different people" (Table 36).

Table 36: Differences in Attitude Composite Scores between Riders and Non-riders

	Rider		Non-rider	
Attitude Composite	**N**	**Mean**	**N**	**Mean**
Benefit the environment at GNP	166	7.40	144	5.31*
Relieve me of the responsibility of driving	169	6.81	146	3.82*
Alleviate parking issues	168	6.80	139	4.51*
Safely travel the Going to the Sun Road	168	6.77	134	4.00*
Shorten traffic delays	168	6.30	145	2.81*
Allow me to see the sights at GNP	164	6.11	138	3.25*
Be a comfortable way to travel the Going to the Sun Road	166	5.81	147	2.64*
Prevent undesirable traffic conditions	169	5.80	143	2.82*
Reduce stress while visiting GNP	168	5.71	144	1.84*
Allow me to go the areas I want in GNP	166	5.05	143	2.46*
Allow me to engage in my chosen activity	169	5.04	142	2.24*
Allow me to have the type of experience I desire at GNP	168	4.36	148	2.23*
Help me decide where to stop along the Going to the Sun Road	168	3.95	141	2.15*
Allow me more time to interact in my family	163	3.95	140	1.75*
Cause me to be with new and different people	172	3.34	149	2.76
Make me more aware of time while visiting GNP	169	2.84	145	1.46*
Require me to plan my day	165	2.19	144	1.22*

*significant difference at $P<0.05$

Subjective Norm Composites

Similar to the attitude composite scores, t-tests revealed significant differences between riders and non-riders with respect to subjective norm composites described above with riders having higher composite scores for each referent than non-riders (Table 37).

Table 37: Differences in Subjective Norm Composite Scores between Riders and Non-Riders

	Rider		Non-rider	
Referent	**N**	**Mean**	**N**	**Mean**
Family	170	30.28	158	15.74*
Travel group	158	28.41	148	13.47*
Park managers	160	28.33	150	22.08*
Friends	166	24.08	155	13.66*

* significant differences at $P<0.05$

Perceived Behavioral Control Composites

Differences also existed between riders and non-riders with respect to perceived behavioral control composite scores. While the mean composite scores for each group were positive (indicating that participants felt in control of that aspect of riding the shuttle), riders had more strongly positive composite scores than non-riders (Table 38).

Table 38: Differences in Perceived Behavioral Control Composite Scores between Riders and Non-riders

	Rider		Non-rider	
Control Factor	**N**	**Mean**	**N**	**Mean**
Understanding how to use the shuttle at GNP	164	5.50	153	2.37*
Having ample time to do the things I want to do at GNP during this visit	170	5.07	158	2.00*
The shuttle will stop at the locations I want	168	4.41	155	2.33*
Being able to get on the bus I want	168	3.63	157	2.01*
Carrying a lot of gear	167	1.87	154	0.52*

* significant differences at $P<0.05$

CHAPTER 8: CONCLUSION AND DISCUSSION

The major purpose of this study was to determine what factors visitors considered when deciding whether or not to ride a shuttle within a national park. Based upon the theory of planned behavior (Azjen 2005), this study examined the effectiveness of attitudes, subjective norms, and perceived behavioral control in predicting visitors' intentions to ride a shuttle. Additionally, this study sought to determine the influence of visitors' higher-order goals of recreation experience preference, chosen recreational activities, and their personal, group, and trip characteristics in predicting intentions toward shuttle-use. Finally, this study examined the importance of visitors' intentions to ride the shuttle in predicting the actual transportation mode choice within Glacier National Park and the difference between visitors who chose to ride the shuttle and those who did not.

Study findings show that the constructs of the theory of planned behavior were effective in predicting visitors' intentions toward shuttle use. Additionally, certain recreation experience preferences, and specific group and trip characteristics improved the effectiveness of the constructs of theory of planned behavior in predicting visitors' intentions toward shuttle use.

Limitations

The research methodology employed in this study has created several limitations for generalizing results. First, a sampling plan designed to balance riders and non-riders created a condition where riders were over sampled while non-riders were under sampled. Also, since sampling was done along the Going to the Sun Road, visitors who

only visited areas of the park other than the Going to the Sun Road were excluded. In addition, a protracted NPS and Office of Management and Budget approval process forced sampling to be done on a condensed schedule in late August and early September. Since many schools are already in session during that time, the sampling schedule may have been more conducive to sampling retired people and less conducive to sampling families with school-aged children. Therefore, results of this study may not be generalizable to all visitors to Glacier National Park.

Also, the popularity of the system, especially during its first year of operation, may have also created some limitations for the study. Because the system was so popular, it consistently ran above expected capacity. This resulted in visitors waiting in long lines for shuttles at both the transit centers and at Logan Pass (the transfer point between the east and west routes at which riders had to change buses). This popularity may have skewed attitudes toward the system in a couple of ways. First, visitors' apparent strong desire to see the shuttle system succeed may have created a situation where visitors were willing to ride the shuttle under conditions that they may not have otherwise (e.g. long wait times). Also, many visitors may have been more forgiving toward shortcomings in the level of service provided since the system was new than they would be in subsequent years of operation or at a park in which an alternative transportation system had been in place for a number of years. Therefore, results of this study may not be generalizable to other parks or to subsequent years at Glacier National Park.

While these limitations do present problems with generalizing the results of this study, they do not diminish the important first step this study is making toward

understanding visitors' decisions toward shuttle use at a national park within the context of their higher order goals of recreation experience preference and activity choice.

Summary

Participants in this study were primarily Caucasian, highly educated, and were return visitors to the park. Almost half of those who responded to both surveys were retired and one-third reported having an ability to walk only limited distances

Study participants were seeking a variety of recreation experiences within the park. In general, visitors sought the following types of activities: Solitude (e.g. being in a place that is quiet, being away from crowds of people), Nature Appreciation (e.g. seeing scenic beauty, being close to nature), Secure/social (e.g. doing something with family, being where things are fairly safe), and Personal Control (e.g. being in control of things that happen).

Participants also engaged in (or planned to engage in) a variety of activities while in the park. Respondents generally fell into four experience types: "Uncommitted Recreationists" (those who generally do not plan their activities), "Diverse Recreationists" (those who planned to/engaged in a wide variety of activities in both developed and natural surroundings), "Immersion Recreationists" (those who primarily planned to/engaged in camping, hiking, backpacking, and back-country camping), and "Front-country Recreationists" (those who primarily planned to/engaged in auto-touring, photography, wildlife, visitor centers).

Visitors' attitudes toward possible outcomes of riding the shuttle at Glacier National Park were widely varied. The outcomes participants had the most positive

attitudes toward were benefiting the environment at Glacier National Park, alleviating parking issues within the park, and being a safe way to travel the Going to the Sun Road. The outcomes resulting in the least positive attitudes of riding the shuttle were being required to plan their day, being more aware of time, and having more time to interact with their family.

Participants indicated only moderate (and widely varied) subjective norms toward riding the shuttle. Visitors indicated having the highest subjective norms toward riding the shuttle with respect to park managers and the lowest subjective norms toward riding the shuttle with respect to friends.

Participants also indicated moderately positive (and widely varied) perceived control over riding the shuttle. Visitors rated understanding how to ride the shuttle as the most facilitating factor and carrying a lot of gear as the least facilitating factor.

Visitors intentions toward shuttle use were also widely varied with the majority of participants indicated either a strong intention to ride the shuttle or a strong intention not to ride.

Predicting Intentions to Ride the Shuttle At GNP

The constructs of the theory of planned behavior were effective in predicting visitors' intentions of whether or not to ride a shuttle in Glacier National Park (as well as their actual behavior). The ability of the theory of planned behavior model to predict intentions was improved when expanded to include the main effects of beliefs about outcome, evaluations of outcomes, subjective norms beliefs and motivation to comply, control belief strength, and control belief power.

The ability of the model to predict behavioral intentions was also improved by the inclusion of recreation experience preference and activity type. While the addition of these variables improved the model, only the variable associated with a recreation experience preference for solitude was a significant predictor of intention. Activity types were not a significant predictor of intentions in the full model, nor was it predictive of intentions including only activity type.

The ability of the model to predict intention was again improved by the addition of the length of stay, group size, and presence of small children. Of these variables, only length of stay and group size were significant predictors of intention.

Comparisons of Shuttle Riders and Non-Riders

Shuttle riders were similar to non-riders in several ways. There were no differences between shuttle riders and non-riders with respect to physical ability, history of alternative transportation use at home or employment status. Riders did however tend to be in smaller groups, place more emphasis on seeing scenic beauty and being in a place that is quiet, and participate in a wide variety of activities. Non-riders, however, were in larger groups, placed greater emphasis on being in control of things that happen, and were more likely to be engaged in auto-touring. Additionally, riders had more positive attitudes, subjective norms, and perceived behavioral control of shuttle use in GNP than non-riders.

Discussion

Results of this study indicate that, consistent with past studies on alternative transportation use (specifically within new contexts), that the decision to ride a shuttle is (at least in part) a conscious, deliberate decision measurable by the constructs of the

theory of planned behavior. Results also indicate that the theory could be expanded to include the influence of visitors' higher order goals of recreation experience preference.

Each of the components of the theory of planned behavior was a significant predictor on intentions to ride the shuttle in the original model. When the main effects were added to the model (in addition to the composite scores), the variance explained by the model was substantially increased. In this model only the attitude composite and subjective norms beliefs were statistically significant predictors of intention.

The strongest positive predictor of intentions in the expanded TPB model was subjective norms beliefs (with the strongest subjective norms beliefs being attributable to park managers). These results could indicate several things. First, visitors may share the beliefs of their important referents resulting in intentions that are consistent with what those referents believe. Visitors may also be more motivated to comply with the beliefs of others than they think they are or are willing to admit. This could be especially true when visiting a national park. For example, national parks have entire departments dedicated to managing the behaviors of park visitors through both direct (e.g. law enforcement, trail closures) and indirect (e.g. communications) actions. Also, 96 percent of participants reported coming to the park with others. Therefore, visitors' decisions toward shuttle use will have been affected by the beliefs of others regardless of their motivation to comply, either through the effective communications of park managers (i.e. the visitor may not care that park managers want them to ride the shuttle, but they may have been convinced of the benefits of riding through park communications) or through the collective nature of the decision created by traveling with a group.

The second strongest positive predictor of intentions was attitude composite scores. While it is not surprising that positive attitudes have a positive relationship with intention to ride the shuttle, it is important to note that visitors' attitudes toward the outcomes of riding the shuttle were both widely varied and generally positive. This may indicate that the strength of a visitors' attitude toward shuttle use is more important that its direction in predicting attitudes.

The expansion of the model to include recreation experience preference and activity choice also increased the amount of variance explained by the model. REP variables were significant predictors of intention in both models. In the expanded theory of planned behavior model, only the preference for experiences of solitude was a significant predictor of intentions. In the model containing only REP variables, however, both solitude and personal control were significant predictors of intention. The variables representing activity type were not significant in either the full model or the model containing only activity type.

To better understand the effects of REP on the model, REP items were correlated with attitude measures. Each of the recreation experiences that were insignificant predictors in the model was significantly correlated to the attitude composite. This may imply that the effects of these REP items on the model were captured by the measure of attitude. The REP for Solitude, however, was not significantly correlated with the attitude composite. This could explain why Solitude was a significant predictor in the model while the other REP variables were not.

Additionally, the recreation experience preferences for nature appreciation, secure social, and personal control were each significantly correlated with many of composite

scores for the individual outcomes. This was not true for Solitude, which was only significantly correlated with four of these outcomes: reducing stress, being more aware of time, benefiting the environment, and relief from the responsibility of driving. This may indicate that for people with a recreation experience preference for solitude may be more influenced by the above outcomes of riding the shuttle than other possible outcomes.

Additionally, visitors who desire experiences of solitude could view the shuttle as a factor that could facilitate or constrain their ability to obtain their desired experiences. For example, visitors who are seeking experiences of solitude (which was a positive predictor of intention to ride the shuttle in both the independent and full model regression analysis) may view riding the shuttle as a beneficial mechanism for achieving the experience of solitude in their desired setting. Many of the popular backcountry hikes begin at locations where access had previously been limited by parking capacity. The implementation of the shuttle system, and the location of shuttle stops at many of these trailheads, created opportunities for people to access back-country areas that they may not have been accessible to them otherwise. Conversely, visitors with a preference for recreations experiences of personal control (which was significant in the model containing only REP items, but lost significance in the full model) could view riding the shuttle as something that would prevent them from having their desired experience (i.e. they would be subject to the schedule and capacity of the shuttle system).

Finally, the model was expanded to include groups and trip characteristics. The increased explanation of variance attributable to group characteristics could be attributable to an increased/decreased ability to ride the shuttle. Specifically, the negative relationship between intentions to ride the shuttle and group size may indicate that larger

groups would find it more difficult to ride the shuttle than smaller groups. It could also mean, as discussed in the section on subjective norms, that participants in larger groups may have felt less in control of the decision to ride and thus had weaker intentions.

The inclusion of group/trip characteristics and specific recreation experience preferences suggest that the theory of planned behavior can be extended to account for higher order goals when predicting behavioral intentions. The increased variance explained by the recreation experience preference for solitude and the number of days spent in the park may be examples of how the visitors' higher order goals for visiting the park influence their lower order goals of transportation mode choice. For example, the additional variance explained by length of stay could be attributed to an unwillingness of visitors to sacrifice their personal freedom or their ability to stop at locations other than those served by shuttle stops when they are only in the park for a short time. In other words, the more days a visitor spends in the park, the more opportunities they have to achieve all of their preferred recreational experiences and engage in all of their desired recreational activities some of which can be achieved through riding the shuttle and some which can only be achieve through the use of their personal vehicle (i.e. to access areas not service by shuttle stops or to engage in activities that require carrying more gear than could be carried on the shuttle). Comparisons of riders and non-riders with respect to activity choice support this claim. For example, almost forty percent of shuttle riders indicated a plan to picnic (or that they had already gone on a picnic) while visiting GNP. But when asked the purpose for which they had ridden the shuttle only eight percent cited picnicking. This may indicate that these visitors used the shuttle for reasons other than

picnicking and then took their personal vehicle to go on a picnic (or that they picnicked prior to or after riding the shuttle).

All of these results suggest that visitors' decisions toward transportation mode choice in a national park are highly interwoven with the experience of visiting the park. While the constructs of the theory of planned behavior were significant predictors of intentions to ride the shuttle, results of this study show that factors more closely related to the experience of visiting a park may influence both the predictors of intention posited by the theory of planned behavior as well as influencing intentions directly. This indicates that Carver and Scheier's (1998) conceptualization of the hierarchical nature of goals may be effective in situating the rational-deliberate (and highly specific) decision on shuttle use (that part that can be studied using the theory of planned behavior) within the hierarchy of goals that visitors come to a national park to achieve.

Implications

This study makes significant theoretical and practical contributions to social psychology, recreation research, and natural resource management. While this study confirms the rational decision making model of transportation mode choice that is prevalent in social psychology (the theory of planned behavior, specifically), it also suggests that the theory could be expanded through the inclusion of hierarchical goals as a direct predictor of intentions. This is especially true within a national park where decisions on transportation mode choice are influenced by visitors' higher order goals of achieving preferred recreation experiences.

This implies that the effectiveness of the theory of planned behavior may be conditional upon the salience of the target behavior in achieving higher order goals. If the behavior is one of many ways in which a person can achieve their higher order goals, then the theory of planned behavior may be sufficient in predicting behavioral intentions (such as what occurred in this study for visitors seeking nature appreciation and secure/social recreation experiences). If, however, the target behavior helps facilitate the meeting of higher order goals (such as with solitude seekers in this study) or if it inhibits the meeting of a higher order goals (such as with personal control in this study) the theory may be insufficient and therefore be extended by the inclusion of a higher order goals element.

This study also makes an important contribution to the field of recreation research by providing a first step toward understanding the effects of a major trend in how visitors travel through and experience national parks. Specifically, this study has begun an exploration of the intersection of visitors' desired recreational experiences and alternative transportation use within national parks. Results of this study support the proposition that transportation mode choice within a national park is contingent not only upon the attitudes, subjective norms, and perceived behavioral control of riding a shuttle, but also upon the primary and higher order goals for which visitors come to the park in the first place (i.e. recreation experience preference).

Finally, this study makes important practical contributions to national park managers. Results of this study have revealed several significant differences between shuttle riders and non-riders. Additionally, this study has revealed a series of visitors' attitudes toward shuttle use and the relationships between specific recreation experience

preference and transportation mode choice. This information can be invaluable to park managers when designing communications about alternative transportation within their parks. Specifically, results of this study can help managers determine how to target communications toward existing attitudes (e.g. the benefits of the shuttle to the environment at GNP, how riding the shuttle can relieve you of the responsibility of driving, or how riding the shuttle can alleviate parking issues in the park) and where to target communications designed to change visitors' attitudes toward shuttle use (e.g. making visitors more aware of time and requiring visitors to plan their day).

Future Research

Results of this study suggest the need for a variety of additional research on transportation mode choice in national parks, the effects of shuttle system ridership on the recreation experiences of national park visitors, and the effects of shuttle system implementation on the types of experiences that can be achieved at locations serviced by shuttle stops.

One suggestion for future research is to replicate the study presented here during future years at Glacier National Park as well as in other parks. Revisiting this study in future years would allow for the opportunity to explore visitors attitudes and intentions toward shuttle use at GNP once the initial popularity and support for the new system has subsided and the system has been firmly established within the park. Another benefit to replication of this study would be to refine the instrument to account for factors not included in the original theory of planned behavior instrument (e.g. group size as an item in the perceived behavioral control scale). Finally, if this study was replicated in future years it could include additions questions aimed at determining if the relationship

between REP and intentions to ride the shuttle a result of consistency, of access to areas where those experiences can be achieved, or both.

In addition to replicating this study, future research should explore other ways of understanding how visitors make decisions on travel mode in national parks. Future research could include studies on the effectiveness of national park communications on shuttle use, studies on group dynamics and how groups make decisions on travel mode choice collectively, and qualitative studies on how travel mode choices are made at the time of decision.

While this study provided a first step in understanding the intersection of visitors' recreation experience preferences and transportation mode choice by trying to understand how visitors made decisions of whether or not to ride the shuttle, it did not explore the effects of shuttle use on the types of experiences visitors achieved. Therefore, another suggestion for future research is to study the effects of shuttle use on visitors' recreational experiences. Specifically, do visitors' experiences change as a result of riding a shuttle? How do visitors incorporate the experience of riding a shuttle into their recreational experiences (e.g. is riding the shuttle part of the experience or are visitors able to segment their experiences such that shuttle use is simply transportation to the location where their recreation experience occurs).

Additionally, future studies should investigate how visitor use patterns change as a result of the implementation of alternative transportation systems in national parks. Do the types of experiences visitors achieve change as a result of increased usage at shuttle stop areas? And if so, how are visitors responding to this change? Do visitors need to go

further into the backcountry to experience solitude? Are visitors able to feel close to nature in areas that are highly used?

In addition to possibly changing the ways visitors experience the park, changes in visitor flow created by the implementation of a shuttle system in a national park create many implications for park management. The redistribution of visitor throughout a park can also redistribute the need for law enforcement, interpretation, wildlife and plant management, and facility maintenance as well. Furthermore, changes made to any one of these areas can have effects on each of the others. Therefore, future studies on transportation management in national parks should focus on park managers as well as park visitors to understand how implementing a major change in visitor services affects other areas of park management.

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APPENDIXES

Glacier National Park Visitor Study

On-site Questionnaire

Summer 2007

The University of Montana

College of Forestry and Conservation
Department of Society and Conservation
Missoula, MT 59801

NATIONAL PARK SERVICE

Glacier National Park
P.O. Box 128
West Glacier, MT 59936

OMB #1024-0224 (NPS #07-049)
Expiration Date: 01/31/2008

Thank you for agreeing to help Glacier National Park!

Your input is important to park management. Response to this request is voluntary. While you are not required to respond, your cooperation is needed to make the survey results comprehensive, accurate, and timely. This survey is sponsored by the National Park Service and the information will be used by park managers to better serve the public.

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1. What is your state or province, or country of residence?

   _____

2. Where are you staying during this visit to Glacier National Park? (Please Check all that apply)

   My primary residence
   My secondary residence in the area
   Residence of friend or relative in the area
   Campground in Glacier National Park
   A lodge/motel in Glacier National Park
   A backcountry chalet in Glacier National Park
   Local motel, hotel, cabin, cottage, or resort outside the park
   Other (please specify) _____

3. If you are staying in a campground at Glacier National Park, will any of those nights be spent in a backcountry campground?

   Yes
   No

4. Please check each activity that you plan to do (or have participated in) while in Glacier National Park during this visit. (check all that apply)

Driving: auto touring	Driving: motorcycling	Ranger led program
Dining out	Fishing	Orienteering
Swimming	Guided hike	Hiking
Horseback riding	Backpacking	Visiting visitor centers
Picnicking	Photography	Camping: backcountry
Camping: in vehicle	Camping: in tent	Bicycling (road)
Walking/running	Watching wildlife	Viewing Scenery
Commercial tour	Other _____	

5. **If you checked hiking or backpacking in question 4,** do/did you have a specific hiking destination in mind?

   Yes (Destination _____)
   No

6. How long do you plan to be hiking (or if you have already completed this hike, how long did you hike)? _____ hours _____ days ❑ don't know

7. Do you plan to (or if you have already completed this hike, did you) end your hike in the same location where your hike started?

   Yes
   No

8. How many days do you plan to be in the park during this visit?

   _____ days

9. How many nights will you be spending inside Glacier National Park?

   _____ nights

10. How often, if at all, do you use public transportation (such as subway, bus, or commuter rail) at home? Please check the one category that ***best*** describes your use of public transportation at home.

    Daily
    A few times a week
    A few times a month
    A few times a year
    Never
    Other (please specify: _____)

    Please check here if public transportation is not available to you at your home

11. Have you ever ridden the free, park- operated shuttle at Glacier National Park prior to filling out this questionnaire?

    Yes
    No

Recreation Experiences at Glacier National Park

12. Below is a list of possible experiences you may want to have while visiting Glacier National Park. For each item please ***indicate how important the experience is*** to you on your visit to the park

	Importance				
Experience:	**Not Important**	**Somewhat Important**	**Moderately Important**	**Very Important**	**Extremely Important**
To be in control of things that happen	1	2	3	4	5
To experience solitude	1	2	3	4	5
To be close to nature	1	2	3	4	5
To photograph wildlife	1	2	3	4	5
To be near considerate people	1	2	3	4	5
To see wildlife	1	2	3	4	5
To be away from crowds of people	1	2	3	4	5
To do something with your family	1	2	3	4	5
To feel my independence	1	2	3	4	5
To view scenic beauty	1	2	3	4	5
To be where things are fairly safe	1	2	3	4	5
To think about your personal values	1	2	3	4	5
To be in a place that is quiet	1	2	3	4	5
To learn about things at Glacier National Park	1	2	3	4	5

We are interested in your thoughts on the new free shuttle system at Glacier National Park. (GNP) For the following questions, please circle the number that most closely reflects your thoughts on the given statement. Please answer all questions, even if you do not intend to ride the shuttle during this visit.

13. How likely is it you will ride the shuttle at GNP during this visit?

1 2 3 4 5 6 7

Very Unlikely Very Likely

We would like to know about your attitudes towards riding a shuttle at Glacier National Park. In question 14, we are interested in what outcomes you think will occur if you ride the shuttle. Then in question 15, we would like to know if you consider these possible outcomes to be good or bad.

14. Please answer the following questions regarding your ***beliefs about riding the shuttle*** at Glacier National Park.

Riding the shuttle bus at GNP will:	**Very Unlikely**	**Moderately Unlikely**	**Slightly Unlikely**	**Neither Likely nor Unlikely**	**Slightly Likely**	**Moderately Likely**	**Very Likely**
Cause me to be with new and different people	1	2	3	4	5	6	7
Allow me to have the type of experience I desire at GNP	1	2	3	4	5	6	7
Allow me to engage in my chosen activities while at GNP	1	2	3	4	5	6	7
Allow me to go to the areas I want within GNP	1	2	3	4	5	6	7
Shorten traffic delays in the park due to construction	1	2	3	4	5	6	7
Prevent me from having to deal with undesirable traffic conditions at GNP	1	2	3	4	5	6	7
Allow me to see the sights at GNP	1	2	3	4	5	6	7
Allow me more time to interact with my family	1	2	3	4	5	6	7
Require me to plan my day	1	2	3	4	5	6	7
Alleviate parking issues within the park	1	2	3	4	5	6	7
Be a safe way to travel the Going-to-the-Sun Road	1	2	3	4	5	6	7
Reduce my stress while visiting GNP	1	2	3	4	5	6	7
Help me decide where to stop along the Going-to-the-Sun Road	1	2	3	4	5	6	7
Benefit the environment at GNP	1	2	3	4	5	6	7
Make me more aware of time while visiting GNP	1	2	3	4	5	6	7
Be a comfortable way to travel through the park	1	2	3	4	5	6	7
Relieve me of the responsibility of driving while in GNP	1	2	3	4	5	6	7

15. In the last question you were asked to indicate the likelihood of a series of possible outcomes to riding the shuttle. In this question, please ***evaluate the desirability each of those possible outcomes*** of riding the shuttle at Glacier National Park.

	Very Bad	Moderately Bad	Slightly Bad	Neither Bad nor Good	Slightly Good	Moderately Good	Very Good
Being with new and different people is	1	2	3	4	5	6	7
Having the type of experience I desire at GNP is	1	2	3	4	5	6	7
Engaging in my chosen activities while at GNP is	1	2	3	4	5	6	7
Going to the areas I want within GNP is	1	2	3	4	5	6	7
Not having to deal with undesirable traffic conditions in GNP is	1	2	3	4	5	6	7
Shortened traffic delays due to construction are	1	2	3	4	5	6	7
Seeing the sights at GNP is	1	2	3	4	5	6	7
Allowing me more time to interact with my family is	1	2	3	4	5	6	7
Requiring me to plan my day is	1	2	3	4	5	6	7
Alleviating parking issues within the park is	1	2	3	4	5	6	7
Safely traveling the Going-to-the-Sun Road is	1	2	3	4	5	6	7
Reducing my stress while visiting GNP is	1	2	3	4	5	6	7
Helping me decide where to stop along the Going-to-the-Sun Road is	1	2	3	4	5	6	7
Benefiting the environment at GNP is	1	2	3	4	5	6	7
Making me more aware of time while visiting GNP is	1	2	3	4	5	6	7
Comfortably traveling through the park is	1	2	3	4	5	6	7
Relieving me of the responsibility of driving while in GNP is	1	2	3	4	5	6	7

16. I will make an effort to ride the shuttle at GNP during this visit.

1 2 3 4 5 6 7

I definitely will not I definitely will

17. Generally speaking, how much do you think each of the following people would think that you should ride the shuttle at GNP?

	Not at All		Slightly	Somewhat	Moderately		Very much
The group you are traveling with	1	2	3	4	5	6	7
Your family	1	2	3	4	5	6	7
Your friends	1	2	3	4	5	6	7
Park Managers	1	2	3	4	5	6	7

18. Generally speaking, how much do you care what the following people think you should do while visiting GNP?

	Not at All		Slightly	Somewhat	Moderately		Very much
The group you are traveling with	1	2	3	4	5	6	7
Your family	1	2	3	4	5	6	7
Your friends	1	2	3	4	5	6	7
Park Managers	1	2	3	4	5	6	7

19. Please indicate how strongly you agree or disagree with each of the following statements.

I expect:

	Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
The shuttle will stop at the locations I want to visit along the Going-to-the-Sun Road	1	2	3	4	5	6	7
I will be able to get on the bus I want	1	2	3	4	5	6	7
I will understand how to utilize the shuttle at GNP	1	2	3	4	5	6	7
I will have ample time to do the things I want to do at GNP during this visit	1	2	3	4	5	6	7
I will carry a lot of gear (backpacks, coolers, recreation equipment, etc) when I travel on the Going-to-the-Sun Road	1	2	3	4	5	6	7

20. I intend to ride the shuttle at GNP during this visit.

1 2 3 4 5 6 7
Strongly Disagree Strongly agree

21. Please indicate the extent to which each of the following factors will make riding the shuttle at GNP easier/more difficult.

	Much more difficult	Moderately more difficult	Slightly more difficult	Neither more difficult nor easier	Slightly easier	Moderately easier	Extremel easier
Being able to stop at the locations I want to visit	1	2	3	4	5	6	7
Getting on the bus I want	1	2	3	4	5	6	7
Understanding how to utilize the shuttle	1	2	3	4	5	6	7
Having ample time to do the things I want to do at GNP during this visit	1	2	3	4	5	6	7
Carrying a lot of gear (backpacks, coolers, recreation equipment, etc) when I travel on the Going-to-the-Sun Road at GNP	1	2	3	4	5	6	7

We would like to know a little about you. Please answer the following questions about you and your personal group. Your personal group refers to members of your immediate travel party, such spouse, family, friends, etc. This does not include any larger, organized groups you may be traveling with, such as school, church, scouts, and tour groups.

22. **On this visit, what kind of personal group (not guided tour/educational/other organized group) were you with? (please check only one response)**
    Alone
    Family
    Friends
    Family and Friends
    Business associates
    Other (please specify _____)

23. On this visit, how many people are in your personal group, including yourself?

    _____ number of people

24. On this visit, how many children are in your personal group?

    ____ Children under six years old
    ____ Children between six and ten years old
    ____ Children between 10 and 18 years old

27. On this visit, were you and your personal group with the following groups?

a) Commercial guided tour	Yes	No
b) Educational group (school, etc.)	Yes	No
c) Other organized group (church, business, etc.)	Yes	No

Thank you for your participation!

Please use the back of this page to make any further comments.

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6 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. Your name is requested for follow-up mailing purposes only. When analysis of the questionnaire is completed, all name and address files will be destroyed. Thus the permanent data will be anonymous. Please do not put your name or that of any member of your group on the questionnaire. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Burden estimate statement: Public reporting burden for this form is estimated to average 9 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to Jack Potter; Glacier National Park, PO Box 128, West Glacier, MT 59936; 406-888-7821; jack_potter@nps.gov

Appendix B: Mail-back Questionnaire

Glacier National Park Visitor Study

Mail-back Questionnaire

Summer 2007

The University of Montana

College of Forestry and Conservation
Department of Society and Conservation
Missoula, MT 59801

NATIONAL PARK SERVICE

Glacier National Park
P.O. Box 128
West Glacier, MT 59936

OMB #1024-0224 (NPS #07-049)
Expiration Date: 01/31/2008

Thank you for agreeing to help Glacier National Park!

Your input is important to Glacier National Park management. Response to this request is voluntary. While you are not required to respond, your cooperation is needed to make the survey results comprehensive, accurate, and timely. This survey is sponsored by the National Park Service and the information will be used by park managers to better serve the public.

We would like to know about your experience with riding the park-operated shuttle during your visit to Glacier National Park (GNP).

1. How many times did you ride the shuttle during the visit to GNP in which you received the initial questionnaire?

   _____ Times

2. During the visit when you were initially contacted, how often did you ride the shuttle bus within the park? (check only one)

   Every time I traveled the road
   Most of the time I traveled the road
   At least half the times I traveled the road
   Less than half the times I traveled the road
   Never

3. For what purposes did you ride the shuttle in GNP during the visit when you were initially contacted? (Please check all that apply)

   To access a trail head for hiking
   To access a trail head for back country camping
   To tour the road
   To go on a picnic
   To view the scenery
   To get to a destination along the road
   To visit a developed area within the park
   To attend interpretive programs
   To visit visitor centers
   Other (please explain: _____)

4. What is the name of the location where you initially got on the shuttle?

Apgar Transit Center	St. Mary Visitor Center	
Fish Creek Campground	Apgar Village	
Apgar Campground	Sprague Creek Campground	
Lake McDonald Lodge	Avalanche Creek	
The Loop	Logan Pass	
Siyeh Bend	Gunsight Pass Trailhead	
St. Mary Falls Stop	Sunrift Gorge	
Sun Point	Rising Sun	Don't know/can't remember

5. What are the names of the locations where you got off the shuttle? (Please check all that apply)

Apgar Transit Center	St. Mary Visitor Center	
Fish Creek Campground	Apgar Village	
Apgar Campground	Sprague Creek Campground	
Lake McDonald Lodge	Avalanche Creek	
The Loop	Logan Pass	
Siyeh Bend	Gunsight Pass Trailhead	
St. Mary Falls Stop	Sunrift Gorge	
Sun Point	Rising Sun	Don't know/can't remember

6. During the visit to the park when you were initially contacted, did you use the shuttle to take any hikes that ended in a different location along the Going to the Sun Road than where it started?

Yes
No (Please go to question 9)

7. If you answered yes to question 6, at what location did you begin your hike?

Apgar Transit Center	St. Mary Visitor Center
Fish Creek Campground	Apgar Village
Apgar Campground	Sprague Creek Campground
Lake McDonald Lodge	Avalanche Creek
The Loop	Logan Pass
Siyeh Bend	Gunsight Pass Trailhead
St. Mary Falls Stop	Sunrift Gorge
Sun Point	Rising Sun

Other _____

8. If you answered yes to question 6, at what location did your hike end?

Apgar Transit Center	St. Mary Visitor Center
Fish Creek Campground	Apgar Village
Apgar Campground	Sprague Creek Campground
Lake McDonald Lodge	Avalanche Creek
The Loop	Logan Pass
Siyeh Bend	Gunsight Pass Trailhead
St. Mary Falls Stop	Sunrift Gorge
Sun Point	Rising Sun

Other _____

9. Did you have access to the following information sources about transportation at Glacier National Park?

Internet	Yes	No
Personal communications with park staff/volunteers	Yes	No
Traveler radio information system (1610 am)	Yes	No
*511 (cellular service)	Yes	No
Printed Materials	Yes	No
Transit center electronic information	Yes	No

10. How would you rate the usefulness of information from the following sources when planning your travel through Glacier National Park? (Circle one number for each item. If you did not have access to any of the items listed below, please circle NA)

	Poor	Fair	Average	Good	Excellent	Did not Access
Internet	1	2	3	4	5	NA
Personal communication with park staff/volunteers	1	2	3	4	5	NA
Traveler radio information system (1610 am)	1	2	3	4	5	NA
*511 (cellular service)	1	2	3	4	5	NA
Printed Materials	1	2	3	4	5	NA
Transit center electronic information	1	2	3	4	5	NA

11. Did you visit one of the transit centers within Glacier National Park? (Either St. Mary Visitor Center or Apgar Transit Center)

Yes
No (Please go to question 13)

12. If you answered yes to question 11, how useful would you rate the electronic and print information you received at the transit center for planning your trip through Glacier National Park? (Please do not include personal communication with park staff/volunteers in this rating)

Poor Fair Average Good Excellent

13. Please rate the park-operated shuttle service at Glacier National Park. (Circle one number for each item) If you did not use the park-operated shuttle during this visit, please go to question 14.

	Poor	Fair	Average	Good	Excellent
Interior cleanliness of buses	1	2	3	4	5
Exterior cleanliness of buses	1	2	3	4	5
Buses being on time	1	2	3	4	5
Comfort of bus	1	2	3	4	5
Drivers' professionalism	1	2	3	4	5
Frequency of service	1	2	3	4	5
Driving habits of bus drivers	1	2	3	4	5
Courtesy of drivers	1	2	3	4	5
Availability of information on shuttle system	1	2	3	4	5
Understandability of information on shuttle system	1	2	3	4	5
Consistency of operations	1	2	3	4	5
Shuttle stop design	1	2	3	4	5
Overall service	1	2	3	4	5

14. Including this trip, how many times have you visited Glacier National Park?

Once only (this trip)
Two to three times
Four to six times
Six to ten times
More than ten times – about how many? _____
Don't know/can't remember

We would also like to know about you and your personal travel group. Please answer the following questions about yourself unless the question specifically asks about your travel group.

15. Do you have any type of National Park Service entrance pass?

No
Yes ⟶

If yes, please indicate which:

National Park Pass

America the Beautiful (Interagency) Pass

16. Were there any individuals in your personal travel group (including yourself) who can only walk limited distances?

Yes
No (**Skip to Question 19)**

17. If yes, which of the following factors limited the distance that one or more members of your personal travel group could walk. (Please check all that apply)

Pain/discomfort
Use of wheelchair
Use of walker/cane
Have a breathing or respiratory condition
Have small children
Prefer not to walk
Other (Please specify: _____)

18. Did your personal travel group encounter any access or service problems in the park as a result of the factor(s) you identified in question 17 above?

Yes
No

19. Please indicate whether you are:

Male
Female

20. Are you Hispanic or Latino?

Yes
No

21. What is your race? (Please check one or more.)

Asian
American Indian or Alaska Native
Black or African American
Native Hawaiian or other Pacific Islander
White

22. What is the highest level of education that you have completed? (Please check only one response)

Less than high school graduate
High school graduate (including GED)
Some college, no degree
Two-year college degree (Associates degree)
Four-year college degree (Bachelor's degree)
Graduate or professional degree
Other (Please specify: _____)

23. Which of the following categories best describes your current employment status? (Please check only one response)

Employed (full or part time)
Homemaker
Full time student
Not employed
Retired
Other (please specify: _____)
Decline to answer

24. Which of the following income groups best describes your total household income in 2006 before taxes? (Please check only one response)

Less than $25,000
$25,000 to $49,999
$50,000 to $74,999
$75,000 to $99,999
$100,000 or more
Decline to answer

Thank you for your participation!

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